



3 0005 03037 8767

# Anchoring Effects in the Absolute Judgment of Verbal Materials

BY

HULDA REES MCGARVEY, PH.D.

ARCHIVES OF PSYCHOLOGY

R. S. WOODWORTH, EDITOR

*No. 281*

150.8  
A673  
no. 281

NEW YORK

May, 1943

LIBRARY

FEB 21 1973

DEPARTMENT OF PSYCHOLOGY  
LIBRARY  
THE ONTARIO INSTITUTE  
FOR THE STUDY OF EDUCATION  
UNIVERSITY OF TORONTO



# ARCHIVES OF PSYCHOLOGY

R. S. WOODWORTH, Editor

COLUMBIA UNIVERSITY, NEW YORK CITY

The Subscription price is six dollars per volume of about 500 pages. Volume I comprises Nos. 2-10; Volume II, Nos. 11-18; Volume III, Nos. 19-25; Volume IV, Nos. 26-32; Volume V, Nos. 33-39; Volume VI, Nos. 40-46; Volume VII, Nos. 47-52; Volume VIII, Nos. 53-58; Volume IX, Nos. 59-63; Volume X, Nos. 64-68; Volume XI, Nos. 69-73; Volume XII, Nos. 74-78; Volume XIII, Nos. 79-85; Volume XIV, Nos. 86-91; Volume XV, Nos. 92-98; Volume XVI, Nos. 99-104; Volume XVII, Nos. 105-112; Volume XVIII, Nos. 113-120; Volume XIX, Nos. 121-127; Volume XX, Nos. 128-133; Volume XXI, Nos. 134-139; Volume XXII, Nos. 140-146; Volume XXIII, Nos. 147-154; Volume XXIV, Nos. 155-162; Volume XXV, Nos. 163-170; Volume XXVI, Nos. 171-178; Volume XXVII, Nos. 179-188; Volume XXVIII, Nos. 189-198; Volume XXIX, Nos. 199-207; Volume XXX, Nos. 208-215; Volume XXXI, Nos. 216-223; Volume XXXII, Nos. 224-230; Volume XXXIII, Nos. 231-238; Volume XXXIV, Nos. 239-244; Volume XXXV, Nos. 245-251; Volume XXXVI, Nos. 252-258; Volume XXXVII, Nos. 259-266; Volume XXXVIII, Nos. 267-273; Volume XXXIX, Nos. 274-281. A list of the early numbers may be obtained from the Archives of Psychology.

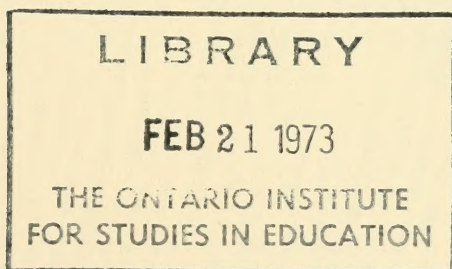
125. Errors of Measurement and Correlation: E. E. CURETON. \$1.25.
126. Experience Factors, Test and Efficiency of Women Office Workers: N. BIND. \$1.00.
127. Delayed Reactions of Infants: C. N. ALLEN. 80c.
128. Factors Measured by the Thorndike Intelligence Examination: J. G. PEATMAN, \$1.00.
129. Educational Success and Failure in Supernormal Children: J. REGENSBURG. \$1.75.
130. Effect of Practice on Visual Perception of Form: J. P. SEWARD. \$1.00.
131. Relation to College Grades of Factors other than Intelligence: D. HARRIS. 80c.
132. Psychological Diff. Between "Racial" and National Groups: O. KLINEBERG. \$1.00.
133. Emotional Diff. of Delinquent and Non-Delinquent Girls: A. COURTHIAL. \$1.25.
134. Learning and Retention of Pleasant and Unpleasant Activities: H. CASON. \$1.25.
135. Investigation of Brightness Constancy: R. E. MACLEOD. \$1.25.
136. The Rorschach Test Applied to Feeble-Minded Group: S. J. BECK. \$1.00.
137. Retention after Intervals of Sleep and of Waking: E. D. VAN ORMER. \$1.00.
138. Stimulus Temperature and Thermal Sensation: F. HEISER. \$1.00.
139. Energy Cost Measurements on Curve of Work: H. J. SCHUBERT. \$1.00.
141. Speed Factor in Mental Tests: P. H. DUBOIS. 80c.
142. Further Studies on the Memory Factor: A. ANASTASI. \$1.00.
143. An Experimental Study on Variability of Learning: S. E. ASCH. 80c.
144. Inventory for Measurement of Inferiority Feelings: R. B. SMITH. \$1.50.
145. The Psychological Effects of Oxygen Deprivation: R. A. MACFARLAND. \$1.50.
146. Relation of Subliminal to Supraliminal Learning: O. A. SIMLEY. 80c.
147. Effects of Noise upon Certain Psychological Processes: F. L. HARMON. \$1.25.
148. Conditioned Responses in Children: G. S. RAZRAN. \$1.50.
149. Resemblance of Parents and Children in Intelligence: M. C. OUTHIT. \$1.00.
150. Influence of Oral Propaganda Material upon Attitudes: K-C. CHEN. 80c.
151. Negative or Withdrawal Attitude: H. PALLISTER. 80c.
152. Judgment in Absolute Units as a Psychophysical Method: J. BRESSLER. \$1.00.
153. Visual Illusion in the Chick: C. N. WINSLOW. \$1.25.
154. Measuring Teaching Efficiency Among College Instructors: G. W. HARTMANN. 80c.
155. Psychogalvanic Responses in Arithmetical Work: R. SEARS. \$1.00.
156. Group Factors in Mental Tests: M. SMITH. \$1.00.
157. . . . Brightness Discrimination Habit in the Chick: A. B. WOOD. 80c.
158. Accuracy of Perception of Visual Musical Stimuli: A. ROE. \$1.00.
159. Effect of Practice Upon Individual Differences: R. E. PERL. \$1.00.
160. Antagonistic Muscle Action (in) Voluntary Effort: D. J. WILSON. \$1.00.
161. Verbal, Numerical and Spatial Abilities of Young Children: B. SCHILLER. \$1.00.
162. Organization of Memory in Young Children: A. I. BRYAN. \$1.00.
163. Self-Estimates of Improvement in Repeated Tasks: N. KNEELAND. \$1.25.
164. Biochemical Study of the Metabolism of Mental Work: H. GOLDSTEIN. \$1.00.
165. Attitudes and Unemployment: O. M. HALL. \$1.00.
166. Change of Socio-Economic Attitudes by Propaganda: S. P. ROSENTHAL. 80c.
167. Methodology of the Digit-Span Test: J. G. PEATMAN & N. M. LOCKE. 80c.
168. Effect of Repetition on Reactions to Electric Shock: J. & G. SEWARD. \$1.50.
169. Speech, Radio, Printed Page as Propaganda Devices: W. H. WILKE. 80c.
170. The Psychophysical Measurement of Visual Sensitivity: F. C. THORNE. \$1.00.
171. The Psychological Analysis of Fashion Motivation: E. D. BARR. \$1.25.
172. The Relation between Basal Metabolism and Mental Speed: J. STEINBERG. 80c.
173. Written Composition & Characteristics of Personality: ALLPORT, WALKER & LATHERS. \$1.25.
174. Block Building Activities of Young Children: F. M. GUANELLA. \$1.25.
175. Goodenough Drawings in Relation to Delinquency . . . : W. E. HINRICHS. \$1.25.
176. Age Factor in Mental Organization: H. E. GARRETT, A. I. BRYAN & R. E. PERL. 80c.
177. Race Differences in Mental and Physical Traits: R. N. FRANZBLAU. 80c.
178. Creative Thought in Poets: C. PATRICK. \$1.00.
179. Photometric Study of the Perception of Object Color: R. H. HENNEMAN. \$1.25.
180. The Influence of Reward to Bonds Remote in Sequence and Time: H. BRANDT. 80c.
181. Confirmation and Information in Rewards and Punishments: J. EISENSEN. 80c.
182. Auditory Threshold in Reverie: M. R. BARTLETT. 80c.
183. Factors Related to Muscular Tension: E. H. HENLEY. 80c.
184. Effect of Context upon Perceptual Differentiation: J. P. FOLEY. \$1.00.
185. Study of . . . Differences in Criminal Tendency: E. H. STOFFLET. \$1.00.
186. Individual Differences in Work Curves: E. S. MARKS. \$1.00.
187. Study of Some Social Factors in Perception: M. SHERIF. \$1.00.
188. Mental Efficiency in Senescence: J. G. GILBERT. \$1.00.
189. Child's Report of Psychological Factors in the Family: R. S. HAYWARD. \$1.25.
190. The Interpretation of Questionnaire Items: A. L. BENTON. 80c.
191. Conditioned Responses: G. H. S. RAZRAN. \$1.50.
192. Experimental Study of the Day and Night Motility: J. D. PAGE. 80c.
193. Color Constancy in the Rhesus Monkey and in Man: N. M. LOCKE. 80c.
194. Development of Attitude Toward the Negro: E. L. HOROWITZ. 80c.
195. Change in Mental Organization: S. E. ASCH. \$1.00.
196. Experience in Perceiving Verbal and Geometric Contexts: J. H. SANDERS. \$1.00.
197. Test Difficulty and Pattern of Mental Organization: M. HERTZMAN. \$1.00.

(Continued on inside back cover.)

# Anchoring Effects in the Absolute Judgment of Verbal Materials

BY  
HULDA REES McGARVEY, PH.D.

ARCHIVES OF PSYCHOLOGY  
R. S. WOODWORTH, EDITOR  
*No. 281*



NEW YORK  
May, 1943



THE LIBRARY

The Ontario Institute  
for Studies in Education

Toronto, Canada





# CONTENTS

CHAPTER	PAGE
I. BACKGROUND OF THE PROBLEM	
Introduction .....	5
The Generality of Principles of Judgment .....	5
The Absolute Scale .....	9
Anchoring Effects in Absolute Judgment .....	16
Changes in the Object of Judgment and the Characteristic That Is Judged .....	23
Statement of the Problem .....	26
II. THE SELECTION OF STIMULUS-ITEMS .....	27
III. EXPERIMENT I: ANCHORING EFFECTS IN JUDGMENTS OF THE SOCIAL PRESTIGE OF OCCUPATIONS	
Problem .....	32
Materials and Procedure .....	32
Results and Interpretations .....	35
IV. EXPERIMENT II: ANCHORING EFFECTS IN JUDGMENTS OF THE UNDE- SIRABILITY OF FORMS OF BEHAVIOR	
Problem .....	52
Materials and Procedure .....	52
Results and Interpretations .....	55
V. GENERAL DISCUSSION OF THE FINDINGS OF THE STUDY .....	70
VI. SUMMARY AND CONCLUSIONS .....	77
REFERENCES .....	79
APPENDIX .....	81





## CHAPTER I

### BACKGROUND OF THE PROBLEM

#### INTRODUCTION

It has recently been suggested that certain laws or principles of judgment operate independently of the particular stimulus-materials that serve as the objects of judgment and independently of the discriminable aspects that are judged (21, 22, 29). The appearance of common principles in the judgment of such diverse materials as, for example, auditory intensities, lifted weights, visual inclinations, odors, and aesthetic objects form the experimental basis for the contention that there is a single "process" or "mechanism" of judgment.

The weight of the evidence upon which the contention of generality is based derives largely from experiments in the fields of psychophysics and affectivity. The basic purpose of the present study is that of investigating the extent to which certain of these principles operate in situations where the objects of judgment are verbal materials and the dimensions of judgment are value-dimensions. Predictions have been made that phenomena analogous to those obtained in psychophysical judgments will appear also in the complex value-judgments of everyday life (29). Verification of these predictions would add considerable strength to the argument for the existence of general principles of judgment.

#### THE GENERALITY OF PRINCIPLES OF JUDGMENT

The case for the existence of principles of judgment which have general applicability rests upon evidence from a number of sources. For our purposes, it will suffice merely to indicate the variety of the bases for the hypothesis of a single mechanism of judgment.

Such very general principles as number-preferences and the round-number tendency have long been recognized as common to many judgment-situations. Coover (12) brought together a mass of statistical evidence demonstrating the influence of these "mental habits" upon judgments in a wide variety of situations. His examination of the Twelfth and Thirteenth Census Reports revealed a tendency for people to give their chronological ages in multiples of five or in even numbers. He found, too, that round-number tendencies and number-preferences distort the distributions of lengths of criminal sentences assigned by judges, of astronomers'

estimates of star-magnitudes, of high school teachers' assignments of percentile grades, of meteorologists' temperature readings, of observers' estimates of time intervals, and of psychologists' readings of time intervals from a kymograph record.

The halo effect so commonly observed on rating scales may be considered as another instance of a very general and widely applicable principle of judgment. Since the halo effect has ordinarily been regarded as a troublesome constant error rather than as a general phenomenon of judgment, to be studied for its own sake, relatively little is known of the specific conditions of its operation. It is generally agreed, however, that the halo effect is especially likely to show itself when the attributes to be judged are vaguely defined and the subject lacks criteria for distinguishing degrees of the discriminable aspects in question (1, 3).

The facts concerning the time-error so commonly found in psychophysical judgments do not lend themselves as yet to a definitive theoretical analysis. The generality of the time-error is attested, however, by the fact that it has been found in judgments of auditory intensities, lifted weights, and the pitch of tones (see 28, 42). Furthermore, its existence has been demonstrated in the field of affectivity as well as in psychophysics. Danzfuss (see 5) finds a negative time-error in judging whether the second of two chords separated by an interval of 2 seconds is more or less agreeable than the first. Beebe-Center's (5) results on comparing the pleasantness of tones or odors indicate that the relation between the length of the interval separating the members of a pair and the direction of the time-error is the same for affective judgment as for judgments of auditory intensity and of pitch.

The "central tendency of judgment," first pointed out by Hollingworth, has been shown to operate in a number of judgment-situations. As a result of experiments on the reproduction of hand movements (19) and on judgments of the size of seen squares (20), Hollingworth concludes, "In all estimates of stimuli belonging to a given range or group we tend to form our judgments around the median value of the series—toward this mean each judgment is shifted . . ." (20, p. 45). His analysis of the data of earlier investigations employing a variety of stimulus-materials confirms the generality of the phenomenon. "Central tendency" has also been demonstrated in affective judgment and is "a common source of error in judging personality" (1, p. 521).

A number of studies point to the existence of a regular relation between judgment-time and similarity of stimuli. Henmon (17),



using discriminative reaction time and working with supraliminal differences in the hue of colors, the pitch of tones, and visual extents, found that the larger the objective difference between the members of a pair of stimuli, the shorter the reaction time. Kellogg (26), in an experiment on brightness discrimination, found a similar result. Kellogg's study brought out the additional fact that the relation between judgment-time and the stimulus-variable is complicated by the number of categories in which the subject is instructed to judge (method of Constant Stimuli). Judgment-times were significantly longer in series requiring a three-category judgment than in series where only two categories were employed. In the three-category series, judgments of Equal required a significantly longer time than judgments in the two outer categories. Fernberger and Irwin (15), using lifted weights and the method of Single Stimuli, obtained quite a different result; the judgment-times for the central category showed no significant difference in length.

The apparent contradiction in the findings concerning judgment-times for the middle category disappears if the width of the middle category is taken into consideration. The width of the middle category, in Single Stimuli, is usually about the same width as the widths of the upper and lower categories, while in Constant Stimuli, it is likely to be smaller and to depend greatly on the observer's attitude (13). Fernberger, Glass, Hoffman, and Willig (14) showed that if the observer is instructed to give an Equals judgment only when absolutely necessary, judgment-time becomes significantly longer than the time required for judgments of Greater and Less. Cartwright (9), in a study of decision-time which used such materials as words and geometrical forms, obtained findings which serve further to clarify the whole problem of the relations between judgment-time, similarity of stimuli, and the number of categories. Cartwright's data support the generalization that "the time required for deciding to which category a stimulus belongs increases as the stimulus approaches the border of a range of equivalent stimuli" (9, p. 195). If more than two categories of response are employed, there will be more than one such border, or category-threshold, and as many peaks in the curve of judgment-time plotted against the value of the stimulus as there are such borders. Since judgment-time is longer for those stimuli which fall at or near a category-threshold than it is for stimuli near the middle of the category, the relation between the judgment-time and the stimulus-

variable will depend on the number of categories employed for a given range of stimulus-magnitudes and on category-width. If the Equals category is narrow, its average judgment-time will tend to exceed that for the two outer categories, since the stimuli called Equal will be at or near the category-thresholds. If, on the other hand, the Equals category is wide, this difference in average judgment-time will fail to appear. Since these relations have been demonstrated with several kinds of material, there is reason to suppose that they are general phenomena of judgment.

A regular relation between judgment-time and confidence in the judgment has been demonstrated in a variety of situations. Hemon (18) found a negative relation between confidence and the time required for judging linear magnitudes. Seward (30) found a similar relation to hold for the time required for recognition of designs and confidence in the judgment. Volkmann (35), using as stimuli visual inclinations, was able to formulate the relation between judgment-time and confidence by an empirical equation. Johnson (23) determined the functional relation between judgment-time and confidence for judgments of linear magnitude, and found some evidence suggesting that the empirical equation which describes this relation is "a general one applicable also to judgments on the meanings of words and on recognition of figures" (23, p. 50). Since confidence is also related to the magnitude of the stimulus-differences (23), the relations between the three variables judgment-time, confidence, and the stimulus-variable may be summarized as follows. Confidence will be low and judgment-time will be long at or near a category-threshold; conversely, confidence will be high and judgment-time short in the middle of a category. Hence, if a category is narrow, the average confidence in the judgments will be less, and the average judgment-time will be longer, than will be the case where the category is wide.<sup>1</sup>

The foregoing examples of regular relations in the judgment of a variety of stimulus-materials serve to illustrate the nature of the evidence that is taken as indicative of a "process" of judgment. We have not, however, touched upon a whole group of phenomena which have provided an important part of the evidence for generality,—those principles which are concerned with the properties of the *absolute scale*. Since the method of the present study involves the establishment of absolute scales and the production of modifi-

---

<sup>1</sup> Johnson's (23) data also suggest that time of judgment continues to decrease as a function of the stimulus-variable even after complete confidence is reached.



cations therein, those phenomena which pertain to the absolute scale are given separate and more detailed consideration.

### THE ABSOLUTE SCALE

The concept of the absolute scale derives originally from the results obtained by the method of Single Stimuli in psychophysics and the essentially similar Rating method in aesthetics.<sup>2</sup> In these methods, no standard stimulus is employed. The observer is simply presented with the members of a group of stimuli one at a time and asked to render a judgment upon each by assigning it to one of a specified set of categories. The number of categories required by the instructions may be as few as two (*e.g.*, Light, Heavy; or Pleasant, Unpleasant) or as many as the experimenter desires. Descriptive names may be given to the categories, as in the foregoing examples; letters may be used; or the subject may be required to judge in physical units such as inches (43), decibels (25), or grams (7). Very often, the categories are designated simply by integral numbers and the observer is instructed to use the lower numbers to denote the smaller stimulus-magnitudes and the higher numbers to denote the larger magnitudes. Since the observer's assignment of a stimulus to one of the categories of judgment does not involve the comparison of the stimulus to a standard, the judgments obtained by the method of Single Stimuli are conventionally termed "absolute" judgments and the method itself is sometimes referred to as the method of Absolute Judgment.

The basis for the observer's judgment in the method of Single Stimuli lies in the fact that he builds up very rapidly an *absolute scale*, a subjective representation covering the series of stimuli employed in the experiment. The presence of such a scale is inferred from the observer's assignment of the various values of the stimulus to the several categories specified by the instructions. The observer's judgment of a given stimulus is relative to the whole series of stimuli; his definition of the categories will be governed by the range of stimulus-magnitudes. Thus, after very brief experience with the stimuli, a 100 gram weight will usually be called "Heavy" if the range of weights in use is from 75 to 105; "Light," if the range is from 95 to 125; and "Medium," if the range is from 85 to 115. To the "mental formation through which knowledge of the series is carried," Wever and Zener (41) gave the term

---

<sup>2</sup> The method of Single Stimuli refers to "any psychophysical method in which the report follows the presentation of one stimulus only" (34, p. 809).

"absolute series." It is now more commonly known as the absolute scale.<sup>3</sup>

The concept of the absolute scale is applicable to a large proportion of the judgments made in everyday life. In making such judgments as "a very tall person," "a splendid dinner," or "a stupid lecture," the individual is assigning an object or situation to a place on his own absolute scale for the dimension in question. The relation of such everyday scales of judgment to variables of past and current levels of stimulation and to attitudinal variables is less clear, of course, than is the case in the laboratory situation where the variables of instruction and stimulation can be controlled. Nevertheless, laboratory findings concerning the properties and behavior of the mental formations known as absolute scales can profitably be applied to the analysis of judgments whose basis of determination is very complex.

The concept of the absolute scale is related to some of the senses in which the term "frame of reference" is used. Like the absolute scale, the existence of the frame of reference is ordinarily inferred from the effects which it has on the individual's judgments. Insofar as the frame of reference is used to denote a *subjective* framework, the two concepts have in common the notion of a subjective formation, based on experiences of stimulation and judgment, which acts as a background against which separate stimuli are evaluated. Sometimes, indeed, the term frame of reference is used synonymously with the term absolute scale. Thus one finds Sherif (31) citing the findings of Wever and Zener (41) on the absolute scale for lifted weights as a case in which the frame of reference is shown to play a rôle in psychophysical judgment. Cantril (8) states that "a frame of reference is an inevitable accompaniment of any series of judgments a person may be asked to make," and he considers that the absolute scales usually dealt with in the laboratory are "essentially highly circumscribed frames of reference" (8, p. 24). It is not always possible, however, to identify the concept of the frame of reference with a scale of judgment, and until adequate definition is given to the term frame of reference, it would appear to be premature to attempt a precise formulation of the way in which the two concepts are related.

---

<sup>3</sup> Absolute judgments also occur even when the specified task is that of comparing two stimuli presented successively. As the observer becomes acquainted with the range of stimuli used in the experiment, a stimulus will often afford an "absolute impression" of being, for example, Heavy or Light (27).



The principal source of information concerning the properties of the absolute scale lies in an analysis of the observer's judgments and his assignment of the stimuli to the several categories of judgment. In some instances, to be sure, the observer is able to give some introspective evidence as to the nature of his scale of judgment and to describe the imagery or other content involved in his impression of the series of stimuli. Very often, however, and particularly after the observer has had some practice, introspection yields no information as to the nature of the absolute scale; the observer is easily able to give absolute judgments but they are unaccompanied by imaginal representations of the scale (41).<sup>4</sup> The failure of introspection is further shown by the fact that large changes in the scale may occur as a consequence of the introduction of some experimental condition, and yet the observer may remain unaware of these changes (21, 22, 29). Even when introspection does provide some information as to the character of the scale, detailed description of its properties and the detection of changes in the scale must depend largely upon the application of appropriate statistical measures to the obtained judgments.

In most investigations of the properties of the absolute scale in the field of psychophysics, statistical analysis of the obtained judgments includes the determination of the category-thresholds for the several categories of judgment, of category-width, and of the center of the absolute scale. All of these measures are ordinarily expressed in units of the physical stimulus. A category-threshold or limen, symbolized as  $L_{(n)}$ , represents the transition point from one category ( $n$ ) to the next ( $n+1$ ). It is defined as "that stimulus value at which the probability of a report in category  $n$  or a lower category equals the probability of a report in a higher category" (29, p. 17). The width of a category is determined by taking the difference between a category-threshold ( $L_n$ ) and the threshold of the adjacent category ( $L_{n+1}$ ). When the number of categories in the scale is an even number, the center of the absolute scale coincides with one of the category-thresholds; when the number of categories is odd, the center of the scale lies midway between two category-thresholds. Thus, if the scale contains 6 categories, the center of the scale is represented by the category-threshold that separates category 3 from category 4; if the scale contains 5 categories, the center of the scale is in the middle of category 3, or halfway between

---

<sup>4</sup> To borrow an example from Woodworth, "A 'heavy' baby is heavy in comparison with the general run of babies, but those other babies are not thought of while you are lifting the particular baby" (42, p. 440).

the category-thresholds that represent the transition points from category 2 to category 3 on the one hand and category 3 to category 4 on the other hand.

Statistical measures such as those listed in the preceding paragraph locate the observer's absolute scale of judgment on a given stimulus-continuum and in relation to the group of stimuli being judged at the time.<sup>5</sup> The degree to which the center of the subject's scale corresponds to, or is displaced from, the center of the group of stimuli can readily be determined. Similarly, the values of the category-thresholds afford a description of the width, in terms of stimulus-units, of the several categories of the observer's scale of judgment and of the scale as a whole. Such values do not express the fact that the absolute scale is constantly shifting up and down in position and expanding and contracting in width but they do "provide an index of its shift from one period of time to another or of its shift with a change in the conditions of judgment" (29, p. 10).

Major determinants of the position and width of the absolute scale are the position on the stimulus-continuum of the particular group of stimuli being judged, and the range of magnitudes of these stimuli (22, 36). In the course of as few as two or three rounds of the stimuli employed, the categories of judgment are found to be appropriately distributed over the scale of stimulus-magnitudes (33, 41, 36). Variability of judgment remains, but, in general, lower categories are assigned to smaller stimulus-magnitudes and higher categories to larger stimulus-magnitudes. A change in the position of the group of stimuli gives rise to a shift in the position of the absolute scale. Wever and Zener (41) required an observer to judge a "light" series of weights (84, 88, 92, 96, and 100 grams) in three categories. This series was followed by the sudden introduction of a "heavy" series (92, 96, 100, 104, and 108 grams). The results indicated an influence of the first series on the second in that all the stimuli in the new series elicited a preponderance of "heavy" judgments for four or five rounds of presentation. Thereafter, however, the judgments were redistributed; the absolute scale shifted to coincide with the position of the new group of stimuli. Truman and Wever (33) report similar findings for judgments of tonal pitch. In the same way, the width of the absolute scale is

---

<sup>5</sup> Data obtained by the method of Single Stimuli in the fields of affectivity and aesthetics are ordinarily not amenable to treatment such as has been described, and the judgments are usually treated as ratings and subjected to the usual type of statistical analysis.



related to the size of the stimulus-range, the distance between the lowest value and the highest value of the stimuli presented for judgment. The center of the stimulus-range may be kept constant and the size of the range altered by dropping off stimuli or adding them on at the extremes. Under these conditions, the absolute scale will expand or contract to conform to the presented stimulus-range (22, 36).<sup>6</sup>

To express the conformity of the absolute scale to the presented group of stimuli, the absolute scale is said to be *anchored* by the stimuli, and the chief anchoring agents under these conditions are the end-stimuli. Volkman, Hunt, and McGourty (40) have shown that if the stimulus-range is held constant, and stimulus-density, or the number of stimuli per unit of the stimulus-range, is varied, category-width is not affected. The fact that category-width does not vary with stimulus-density, as it does with stimulus-range, leads them to conclude that "category-width depends upon the position of the end-stimuli and not upon any intermediate stimuli . . . the absolute scale seems to resemble a linear chain of categories whose ends are constrained by the two end-stimuli" (40, p. 282).

The absolute scale that establishes itself on the presented stimuli may, in many cases, be said to be a modification of a pre-existing absolute scale based on the observer's past experience of stimulation and judgment. Evidence for the existence of a pre-existing absolute scale is found in the fact that an individual faced with a new task of judgment is not completely at a loss for a basis for his early judgments. The initial judgments, made before the observer is acquainted with the series of stimuli, are not made entirely at random. Rogers (29) reports that his subjects, instructed to judge lines of light in 6 categories of inclination, asked in the very early trials such questions as "'When are the ones and twos coming?,' 'Did you leave out the sixes?,' etc.'" (p. 16). Tresselt and Volkman (32) obtained from a large number of subjects a single absolute judgment on each of 12 lifted weights. Subjects were instructed to judge in the three categories Heavy, Medium, and Light. Order of presentation of the weights was such that each of the 12 weights appeared in each of the 12 serial positions an equal number of times. Thus 10 subjects lifted a 120-gram weight first, 10 sub-

---

<sup>6</sup> There are limits beyond which the absolute scale cannot be compressed. Volkman (32) has shown that if the stimulus range is very greatly reduced, the absolute scale breaks into several disconnected portions. The observer is no longer able to use all the categories at one and the same time; he requires a smaller number of categories for a small range of stimuli.

jects lifted it second, *etc.* Analysis of the distributions of Medium judgments showed that early in the series they were widely, though not uniformly, distributed over the various stimuli. The center of the Medium category was initially relatively high for some subjects and low for others. These findings are taken as evidence that as a consequence of exposure to different past levels of stimulation the different subjects brought to the task absolute scales which differed in position. In the course of judging the same set of stimuli, however, the subjects' old absolute scales shifted and the centers of their scales tended to coincide.<sup>7</sup> To say, then, that the absolute scale becomes anchored by the range of stimuli which the subject is currently judging is simply to say that the pre-existing absolute scale is shifted in position, is re-centered, is made wider or narrower, to conform to the current level of stimulation. If, through lack of experience, the subject possesses no absolute scale for the particular characteristic of the material that he is asked to judge, an entirely new scale of judgment must be constructed.

The tendency of an absolute scale to conform to the presented stimulus-range and to shift with a shift in that range has been demonstrated not only with a variety of materials in the field of psychophysics but in the field of affectivity as well. The relativity of judgments of lifted weights, tonal pitches, visual inclinations, *etc.*, is paralleled by the relativity of affective judgments. Beebe-Center's (4) experiments on affective equilibrium or hedonic contrast indicated that the affective absolute scale was largely determined by the group of stimuli being judged at the time. More recent experiments by Cohen (11) demonstrate even more clearly the relativity of affective judgment. Cohen asked his observers to make absolute hedonic judgments on 15 odors in terms of a scale of 7 categories extending from "very pleasant" to "very unpleasant." Thereafter he increased the stimulus-range by adding, in some experiments, 6 stimuli that had been previously determined to be unpleasant; in other experiments, the 6 added stimuli had been previously determined to be pleasant. In both sets of experiments, the change in the stimulus-range led to a redistribution of the judgments throughout the absolute affective scale, with the largest changes in judgment occurring for those stimuli which were close

---

<sup>7</sup> Some aspects of the data of Tresselt and Volkmann suggest the possibility that "when a pre-existing scale is brought to a new situation, this scale thereupon breaks down, and a new scale must be constructed. It would then be one problem to find out how an old scale is broken down, and a slightly different one to find out how a new scale is established" (32, p. 241).



to the extreme at which the new stimuli were added. The affective scale had to shift in order to make room for the new stimuli in the top (or bottom) categories. Cohen concludes that "the relativity of judgment described above applies not only to P and U, but also to other absolute judgments. It is a feature of absolute judgments in general" (11, p. 100).<sup>8</sup>

The significance of the principle of relativity of judgment is not confined to judgments made in the laboratory. Tresselt and Volkman (32) point out that

Everyday life offers many examples of shifts in absolute scales that are brought about principally by changes in the stimulus-situation. The stimuli that are specifically social, the voiced opinions of other people, for example, may determine the shifting, but the non-social stimuli are also effective. If a man receives an increased wage and moves from a tenement to a private dwelling, his scale is likely to shift so that the new home loses part of its initial attraction, and the old one seems in retrospect worse than it ever did before. The man is far more likely to point this out himself than allow his friends to do it; that is to say, his shift of scale probably does not result from the directly expressed opinions of others. It results, rather, from the new conditions of living as he perceives them (p. 241).

Despite this important principle of the conformity of the absolute scale to the current level of stimulation, the degree of such conformity is definitely limited. Other variables than those of current stimulation are effective as further determiners of the position and width of the absolute scale. As has already been shown, the level of *past* stimulation determines, for a time, the judgments of tonal pitch or of lifted weights when a new stimulus-range is introduced. Prior experiences, if they form part of a "unitary temporal group" (5) with present stimuli, may exert an anchoring influence on the absolute scale. It may be supposed, further, that absolute scales formed along some dimensions are more firmly anchored on a given portion of the stimulus-continuum than are the absolute scales for weight and for pitch and would thus be more resistive to shifting. The absolute affective scale tends to shift less completely with a shift in the stimulus-range than is the case with lifted weights, visual inclinations, *etc.* Moreover, forms of anchoring other than stimulus-anchoring have been shown to be highly effective as additional determiners of the absolute scale. As will be demonstrated

---

<sup>8</sup> Beebe-Center voices a similar conclusion. "As a matter of fact, hedonic contrast turns out to be a special case of a more general psychological principle. . . . Relativity of judgment is not a phenomenon of pleasantness and unpleasantness only. It seems to apply to all judgments. The intensities of sounds and of weights depend in the same way upon the other intensities that form with them a unitary psychological group" (6, pp. 384-385).

in the following section, a value which the observer simply holds in mind may radically displace the scale with reference to the current level of stimulation provided by the stimulus-range.

#### ANCHORING EFFECTS IN ABSOLUTE JUDGMENT

Several recent studies have been concerned with the effects on the subject's absolute scale brought about by the introduction of anchoring agents in addition to those provided by the group of stimuli upon which absolute judgments are demanded. The operation of anchoring effects has been demonstrated with such a variety of stimulus-materials and dimensions of judgment that the changes which occur in the absolute scale may be said to be characteristic of the behavior of absolute scales in general.

The anchoring agent introduced as an experimental variable may consist of an actual physical stimulus which is presented to the observer with the instructions that its subjective magnitude is to define for him a given category on his absolute scale. Suppose, for example, that the observer is judging lifted weights in 6 absolute categories. The experimenter, after a control series, presents before each stimulus to be judged a weight that is heavier than any of those in the group of stimuli, and instructs the observer that this weight is to represent to him category Six. The anchoring stimulus does not, however, necessarily lie above the stimulus-range; any value of the stimulus may be employed as an anchoring stimulus and any category may be selected as the one to be anchored (29, 39).

When the anchoring stimulus lies outside the stimulus-range, the subject's absolute scale shifts in position in the direction of the anchoring stimulus and increases in width (36, 22, 29). Suppose that the anchoring stimulus lies above the stimulus-range, as in the example given in the preceding paragraph. The subject's absolute scale shifts *upward* as shown by a drop in the frequency of judgment in the upper categories and a corresponding increase in the frequency of judgment in the lower categories. The center of the subject's absolute scale, measured in terms of stimulus-units, rises, as do the category-thresholds. A stimulus must have a greater magnitude to evoke a judgment of, *e.g.*, category Four than was required before the shift in the subject's absolute scale took place. The anchoring effect is not, however, a shift of the scale as a whole; it is, rather, an *extension* of the scale toward the anchoring value (36). The subject's scale of judgment ordinarily remains anchored



at the bottom by the lowest member of the stimulus-series and the scale extends upward toward the anchoring value. Since the scale remains anchored at the bottom and "moves past" the top stimuli of the series, the effect of the anchoring stimulus is greater on those stimuli which lie at or near the top of the stimulus-range. The extension of the scale is not complete. The top end of the subject's absolute scale does not coincide with the anchoring value, but is, rather, determined by some value which lies between the value of the top stimulus of the series and the value of the anchoring stimulus (36).

Anchoring agents need not be physical stimuli which are presented to the subject. Volkman (36) has shown that a value of the stimulus which is simply "held in mind" may exert an anchoring influence on the position and width of the subject's scale of judgment. Inclined lines of light, varying from 40 to 50 degrees above the horizontal and exposed singly in a dark box, were to be judged in 6 absolute categories of inclination. In the control series, no anchoring agent other than the stimuli themselves was introduced. In the experimental series, the subject was instructed to let the horizontal define his category One and the stimuli were then judged again. The horizontal was not, at any time, presented as a stimulus. A second experiment investigated the anchoring effect brought about by a value of the stimulus selected by the subject himself. He was instructed to select a value of the stimulus steeper than any that had been shown, yet not vertical, and to hold this value in mind to define his category Six. At the end of the experiment, the experimenter was able to determine the value selected as an anchoring point by asking the subject to adjust the inclination of the line to that value. The results of both experiments exhibited the characteristic features of the anchoring effect. Extension of the absolute scale toward the anchoring value occurred. The extension, however, was not complete; the scale shifted toward the anchoring value but did not reach it. The categories of the absolute scale which lay nearest to the anchoring value exhibited the greatest change. It may be concluded that anchoring agents, to be effective, need not form a part of the present stimulation; an anchoring influence may be exerted by any value of a stimulus which the subject holds in mind.

The operation of anchoring effects in the field of affective judgment has been investigated by Hunt and Volkman (22), and it is evident from their results that the same phenomena appear in affective as in psychophysical judgment. A series of 10 standard Mil-

ton Bradley colors were chosen as stimuli, and subjects were asked to judge the pleasantness and unpleasantness of the colors in terms of a scale of seven categories. At a second experimental session, the instructions required the subject to select the most pleasant color he could think of, to hold this color in mind throughout the session, and to let its pleasantness define the category "Seven" of his absolute scale. In each session, 10 absolute judgments were made for each of the 10 stimuli, and the effect of the anchoring color on the subject's scale of judgment was determined by comparing the means of the 10 judgments made for each color under the two conditions. The anchoring effect was shown by the fact that the means of the judgments made in the anchoring session were lower than the means of the judgments made in the control session. The color held in mind by the subject as the most pleasant he could think of brought about an upward shift of the absolute scale toward the anchoring value, exactly as was found in the case of visual inclinations. Volkmann's (36) finding that the anchoring effect involved an extension of the scale toward the anchoring value and not merely a shift in the center of the scale was duplicated by the findings for the affective scale. The difference between the mean judgments for the first and second sessions tended to be larger for those colors which were initially assigned to the higher (more pleasant) categories than for those colors which were initially assigned to the lower categories. The affective scale remained anchored at the bottom by the least pleasant stimuli in the series and moved past the top stimuli.

The occurrence of the anchoring effect in judgments made along value-dimensions has been demonstrated by Hunt (21) in a series of experiments which extend the study of anchoring to aesthetic and ethical judgments and to judgments of the intelligence of children from photographs.

The general method of all Hunt's experiments was the same whether the stimulus-materials consisted of ivory carvings, colored reproductions of modern paintings, photographs of children, or verbal statements of ethical offenses. At an initial session, the subject was presented with the series of stimulus-items and asked to rate them in terms of a scale of 11 categories. At a later session, he was instructed that one extreme of the absolute scale (either step 1 or step 11) was to represent the lowest or the highest value that he could "think of" for the dimension in question. A new series of judgments was then made. In some experiments, the stimulus-items were presented simultaneously and only one judgment for



each item was taken in each session; in others, the method of Single Stimuli was used and five judgments for each item were rendered under each condition. The treatment of the results was similar for all of the experiments; the separate ratings given to each of the stimulus-items were averaged and the effect of the anchoring instructions was determined by noting the difference between the averages obtained before and after the anchoring agent was introduced. The anchoring effect was clearly established, since the differences were always in the direction demanded by the anchoring effect. Furthermore, the smaller average deviations of the series of judgments made in the anchoring session showed that the characteristic extension of the scale took place. The stimulus-items "are crowded into a smaller portion of the scale."

Chapman and Volkmann (10) have shown that the concept of anchoring can be profitably applied to even such complex judgments as those involved in stating one's level of aspiration. In their study of the effects of knowledge of the performance of other groups on subjects' estimates of their own future performance in a task, several anchoring influences were found to be present. The tasks employed were tests of "ability to solve problems" and tests of "literary acquaintance." Anchoring points which were presumably significant were the subject's knowledge of the score to be attained by chance alone, which exerted an upward effect on the level of aspiration, knowledge of the maximum possible score, which exerted a downward effect, and the subject's estimate of his own ability. The directional effect of this last anchoring point would vary with the subject's self-estimate. In addition, the knowledge of the performance score of another group, whose supposed score was reported to the subject, exerted an anchoring influence which served to raise or lower the stated level of aspiration, if such knowledge were given before the level of aspiration became too dependent on the subject's own experience with the task. If knowledge of the performance of other groups was given only after the subject had had considerable experience with the task and his own success or failure, the "frame of reference" in terms of which he set his level of aspiration was too "determinate," too firmly anchored in terms of objective experience, to be subject to the anchoring influences of the scores of other groups. Under these circumstances, the level of aspiration remained unchanged.<sup>9</sup>

---

<sup>9</sup> Gould and Lewis (16) found that knowledge of the performance of another group may affect the level of aspiration to some degree even when the subject knows his own level of performance.

It might be expected that the amount of change in the position and width of the absolute scale brought about by the introduction of an anchoring value would depend on the distance of the anchoring value from the range of stimuli. The introspections of Hunt and Volkmann's (22) subjects afforded some support for the notion that a more distant anchoring value effects a greater shift in the absolute scale than does an anchoring value close to the stimulus-range, but the lack of an adequate measure of the affective value of the anchoring colors made it impossible to verify the hypothesis. Rogers (29), however, has made a direct attack on the problem of the shift in the absolute scale as a function of the remoteness of the anchoring value, and, at the same time, has added further evidence for the existence of general principles of judgment.

In Rogers's first experiment, the stimulus-material consisted of inclined lines of light to be judged by the subject in 6 absolute categories of inclination. The subject was instructed to use the lower categories for lines nearest the vertical and the higher categories for lines farthest from the vertical. In the first two experimental sessions, absolute judgments were made without the introduction of any anchoring stimulus. In later sessions, an anchoring stimulus was presented just before each of the stimuli to be judged, and the observer was instructed that the anchoring stimulus "will tell you what you are to call a 'Six.' " The stimulus-range remained constant throughout the experiment; the 6 stimulus-values employed were inclinations of 10, 16, 22, 28, 34, and 40 degrees from the vertical. Twelve values of the anchoring stimulus were used. A single anchoring value was used in a given experimental session. In the first session with anchoring, the anchoring stimulus was an inclination of 40 degrees, the same value as the top of the stimulus-range. In succeeding sessions, the anchoring values were inclinations of 45, 50, 60, 70, 80, 90, 100, and 110 degrees in an ascending order of magnitude. Later, a descending series was run; here, the anchoring stimuli in succeeding sessions were inclinations of 90, 75, 60, 45, 35, and 25 degrees. The last two values were within the stimulus-range but the instructions still designated the anchoring stimulus as defining the sixth category.

For each session, category-thresholds for the several categories of judgment were determined. When these category-thresholds were plotted as a function of the anchoring stimulus, it was found that "up to a certain point, the anchoring effect measured by the shift in category-thresholds is a rectilinear function of the remote-



ness of the anchoring stimulus" (29, p. 40). As shown by a rise in the category-thresholds, there was a regular increase in the width of the absolute scale as the anchoring value receded from the top of the stimulus-range, and the point at which this rectilinearity broke down was the same for every determinable category-threshold for a given subject. Furthermore, the break in the function occurred at the same point in both the ascending and the descending series, in spite of the fact that a "considerable period of time" elapsed between sessions with the same anchoring value. In the descending series, two of the values of the anchoring stimulus were within the stimulus-range itself, and the data indicated that the function remains rectilinear under these conditions. The category-thresholds continued to fall; the absolute scale was compressed much as if the stimulus-range were reduced (38).

The break in the function indicates that the absolute scale has limits of extension, limits which vary with the individual. The fact that the break in the function occurred in the same place, for a given subject, in both the ascending and the descending series, led Rogers to suggest that "this is a stable characteristic of an individual O's frame of reference, suggesting a limitation of some general mechanism of judgment" (p. 22). The subjects' introspections afforded little information about the nature of the change reflected by the break in the function; they were unconscious that large changes in their scales were taking place. Rogers suggests that the change indicated by the break in the function and the individual differences in the trend of the functions after the break, are to be interpreted in the light of the anchoring agents which are inherent in the situation. When stimuli are presented for absolute judgment without the introduction of any additional anchoring stimulus, the top and the bottom stimuli constitute the two principal anchoring agents.<sup>10</sup> When a specially designated anchoring stimulus is introduced, not too remote from the stimulus-range, "the three major anchoring agents operate in unison and the extension of the scale is regular" (29, p. 21). Beyond the region of rectilinearity, beyond the limit of extension of the scale, one of several possibilities may be realized. Any one of the three major anchoring influences may suffer a loss in effectiveness, and the trend of the function will reflect the change in the scale which results from such loss. For

---

<sup>10</sup> The fact that the end-stimuli constitute the principal anchoring agents under these conditions is attested by experiments on end-anchoring, in which the top and bottom stimuli are presented before each of the stimuli to be judged. The effect is one of stabilization of the scale of judgment (39).

example, the special anchoring stimulus may no longer operate as a major influence on the scale, and the scale will lose its extended character, or remain somewhat extended but undergo no further extension as the anchoring value continues to recede from the stimulus-range. Similarly, the top stimulus or the bottom stimulus may suffer a loss in effectiveness. Which of these possibilities is realized will probably depend, Rogers suggests, on the observer's attitude toward the three principal anchoring agents.

In order to determine whether the relations discovered in the experiment on visual inclinations represented general principles applicable in any similar situation or whether they were specific to the particular stimulus-material employed, Rogers (29) carried out a second experiment in which the stimulus-material, lifted weights, belonged to an entirely different modality. The general plan of the experiment was identical with that of the first experiment. The subject was instructed to judge the heaviness of the weights in 6 absolute categories, using the higher numbers for the heavier weights. The 6 values of the stimulus that were employed ranged from 55 to 141 grams in steps of equal subjective magnitude. Eight values of the anchoring stimulus were used; only an ascending series was performed.

The results of the experiment on lifted weights demonstrated that the functional relation determined in the first experiment was not peculiar to judgments of visual inclinations, but, rather, amounts to a "general principle of judgment, independent of the stimulus-material that is presented and the characteristic that is judged" (29, p. 40). The same rectilinearity of the function obtained by plotting category-thresholds against magnitude of the anchoring stimulus was shown to hold throughout part of the range, and the same break in the function, occurring at different points for different subjects, was found.

On the basis of the similarity of the findings of the two experiments, Rogers suggests that "it may be predicted that the same relations will hold in any comparable sort of absolute judgment. Even esthetic judgments and similar judgments of 'value' would probably show the same anchoring effects so far as they could be examined quantitatively" (29, p. 40). The studies of anchoring described earlier have already demonstrated that experiments in the judgment of psychophysical materials can be of service in the analysis of the conditions that determine such complex judgments as estimates of moral value and of aspiration levels. The verification

of Rogers's prediction that relations similar to those found for visual inclinations and lifted weights would hold also for judgments of value would demonstrate even more clearly the similarities between varieties of judgment-tasks that are often considered to represent widely separated psychological problems. To put Rogers's prediction to experimental test is a major concern of the present study.

#### CHANGES IN THE OBJECT OF JUDGMENT AND CHANGES IN THE CHARACTERISTIC THAT IS JUDGED

Changes in judgment which do not reflect a change in the properties of the absolute scale must be distinguished from the anchoring effects discussed in the preceding section. There are circumstances under which radical changes in the particular judgments may take place and yet the scale of judgment remain substantially unchanged. If, for example, the subject reinterprets the stimulus-situation so as to give the judged object an entirely new meaning, the specific responses made to the object will be different from the responses rendered before the new interpretation was in force. Such changes in judgment do not stem from a change in the scale of judgment, but rather from a change in the object that is judged. Or, again, if the subject shifts from judging in terms of one characteristic or attribute of the stimulus-material to judging in terms of a different attribute, there will be changes in the particular judgments rendered upon the same objects under the two conditions. Since conditions which ordinarily give rise to anchoring effects may, on occasion, result instead in changes in the object of judgment or changes in the characteristic that is judged, it is of methodological as well as theoretical importance to differentiate between changes in judgment due to shifting of the subject's absolute scale and changes in judgment brought about by other factors.

The behavior of one of the subjects in Hunt and Volkmann's (22) experiment on effective anchoring (see above, p. 17) demonstrates the effects of a change in the characteristic that is judged. The subject misunderstood the anchoring instructions, and instead of judging the colors in the stimulus-series in terms of their pleasantness, as he had done in the sessions without anchoring, he made his judgments on the basis of the similarity of the stimulus-colors to the color he was holding in mind. "The basis of judgment was a comparison of colors, and not a comparison of affective values" (22, p. 91). As a consequence of the change in the dimension of judgment, the subject's judgments failed to show the usual anchoring shift.



Hunt (21) points out that the introduction of an anchoring value may lead to the redefinition of a dimension which is vague or not clearly understood by the subject, and that the change in the basis of judgment will prevent the appearance of the anchoring effect. One of Hunt's subjects found aesthetic judgments difficult, and in the session without anchoring she made them blindly and without real understanding of the meaning of "aesthetic." The addition of the anchoring value provided a concrete definition of the dimension and the subject made her judgments by constant reference to "the best picture she had ever seen." The judgments made in the two sessions proved to be entirely unrelated to each other.

The important rôle which re-interpretations of the object of judgment can play in bringing about changes in the particular judgments is demonstrated in a series of experiments by Asch (2). These experiments deal with the general problem of the influence of external standards, in the form of opinions alleged to be held by other groups, on subjects' judgments of situations which are "objectively unclear." The materials for judgment consisted of a list of 10 professions to be ranked for the five qualities of intelligence, social usefulness, conscientiousness, stability of character, and idealism. In one set of Asch's experiments, Group A performed the task without further instructions. Other groups, B, C, and D, drawn from the same student population, were provided with a fictitious ranking of the profession of "politics" for the various qualities and informed that the ranks represented the opinion of a "congenial" group, a group of 500 college students. The experimental groups were given the same task as that of Group A, and the standard was supposedly introduced only to illustrate the nature of the task. The alleged standard of judgment which was presented to Group B placed "politics" *first* for all the qualities, while that presented to Group C placed "politics" *last*—a position which the results of Group A showed to be close to the spontaneous opinions of the subjects themselves. In the case of Group D, the standard placed "politics" first for some qualities and last for others. The results of the experiment indicate that the external standards were highly effective in determining how "politics" was ranked in relation to the other professions. For each of the experimental groups, the mean rankings for "politics" were found closely to resemble the ranks presented as the standard of the group. At first glance, it might appear that the effect of the group standard

was actually to raise or lower the subjects' opinions of the intelligence, idealism, *etc.*, of members of the profession of politics. Interviews with subjects in the experimental groups revealed, however, that the way in which the standard operated was to determine for the subjects the *meaning* of the term "politics." The subjects in Group B reported that the group of politicians that they had in mind in making their judgments consisted of statesmen or national political leaders, whereas the subjects in Group C spoke of "Tammany Hall," "local politics," *etc.* Thus the groups "differed, not in the way they judged the same group of people, but in the groups they chose to judge" (2, p. 438). The standard served to define the object of judgment and the particular responses followed from the manner in which the object was defined. The changes in judgment did not follow from a change in the subjects' scales of judgment but from a change in the object that was judged.

Radical changes in the meaning of an object of judgment are to be expected only when the stimulus-material is sufficiently ambiguous to be capable of more than one interpretation. Asch points out that conclusions based on the results obtained in situations which are objectively unclear cannot be generalized to "judgments arrived at in the light of knowledge and a critical attitude" (2, p. 462). Asch, Block, and Hertzman (3) had shown earlier that judgments of the characteristics of historical and political slogans showed much less susceptibility to shift under the influence of external standards than did judgments of the qualities of professions. They argued that in the task of judging slogans for such characteristics as compellingness to action, social significance, *etc.*, the "objective situation is relatively well-structured" since the subject has a fund of political and historical knowledge upon which to draw in making his judgments. Lewis (24), in an extensive study of the judgments of slogans, found that the rankings of slogans remained relatively unchanged under the influence of either conflicting standards or congenial standards, and, furthermore, that conflicting standards were rejected whether their source was an admired or a rejected political leader. Interview material confirmed Asch's finding that shifts in the judgments, when they did occur, came as a consequence of a change in the meaning of the slogan. The prestige of the imputed source of a standard of judgment did not operate *directly* to change subjects' judgments but, rather, led them to search for another possible interpretation of the slogan in an effort to make the standard reasonable.

There can be no doubt that the opinions of other people are very often a significant factor in determining the position and width of a scale of judgment. The opinions of groups and individuals can, for example, provide anchoring values which produce large modifications in the scale of judgment. In Sherif's (31) experiments on judgments of the autokinetic effect, the voiced opinions of the other members of the group can be considered as anchoring influences which affected the subjects' scales of judgment. The experiments of Asch and of Lewis, however, bring into sharp relief the necessity for making a distinction between such changes in the actual scale of judgment and changes in the object of judgment.

#### STATEMENT OF THE PROBLEM

The experiments to be reported in the present study are concerned with judgments of the degree of social prestige commanded by occupations, and with judgments of the undesirability of forms of social behavior.

It has been shown that in the course of making absolute judgments of psychophysical materials the subject builds up a subjective impression of the series of stimulus-magnitudes, or an "absolute scale," that conforms to the group of presented stimuli. It has been shown, further, that characteristic changes take place in such absolute scales when an "anchoring stimulus," lying outside the range of stimuli presented for judgment, is introduced to define for the subject the top or bottom category of the scale.

The main concern of the present experiments is the investigation of anchoring effects in the absolute judgment of social values, and the major problem is that of determining the functional relation that obtains between the position of the absolute scale and the remoteness of the anchoring value from the group of stimulus-values. The study was undertaken in order to determine whether relations similar to those which have been found to hold with psychophysical materials would appear also in judgments of verbal materials along value-dimensions.



## CHAPTER II

### THE SELECTION OF STIMULUS-ITEMS

In order to attack the problem of the functional relation between the position of the subject's scale of judgment and the distance of the anchoring value from the range of magnitudes provided by the stimulus-items, the experimenter must be able to select objects for judgment that represent a given range of magnitudes and to select anchoring values at graded distances from the top or bottom of that range. For most psychophysical materials, these requirements present only a minor problem. The experimenter can deal either in terms of physical units of stimulus-magnitude or in terms of units of subjective magnitude where the relation of subjective magnitude to stimulus-magnitude has been determined. But when the dimension of judgment is the pleasantness or beauty of objects or some other evaluative dimension, the experimenter is faced with the necessity of first determining, even if only roughly, the relative subjective magnitudes of the objects to be used as stimulus-items as well as of those to be introduced as anchoring values.

It was essential to the performance of the present experiments that for each subject prior determinations be made of the relative degrees of prestige commanded by a large number of occupations and the relative degrees of undesirability of a large number of items of social behavior. Only on the basis of these prior determinations of the relative subjective magnitudes of the items was it possible to select items representing a given range of prestige-value or of undesirability and to select anchoring values at different subjective distances from that range.

The choice of a method of determining the relative subjective magnitudes of the stimulus-items presented in itself certain methodological problems. The feasibility of using the ranking, or order of merit, method was ruled out by the fact that it was necessary for the subject to judge a large number of items in order to permit the selection of a sufficient number suitable for use in the main experiment. A modification of the strict order of merit method requires the subject to sort the items into a given number of piles or grades representing degrees of the attribute in question. In some uses of the method, the subject is left free to decide upon the number of piles into which he is able to separate the items. A preliminary trial of this procedure showed it to be nearly as cumber-

some for the subject as the strict ranking method. The range of subjective magnitudes covered by the items was so great that the subjects used from 20 to 30 piles to achieve a result that was satisfactory to them, and required nearly two hours to carry out the task of arranging the items. In view of the difficulties of the method for the subject, it was rejected in favor of a graphic rating procedure similar to that which has been widely used in the rating of personality characteristics and to that which has been employed to determine degrees of confidence in judgments (23, 30).

The graphic rating procedure presents the subject with a much easier task than do the ranking procedures. At the same time, it enables him to express the relative subjective magnitudes of the items without forcing him to use a specified number of categories as is usually the case in a numerical rating scale. In the graphic scale procedure, only one item is present at a time and the subject expresses his judgment upon it by making a check mark on a straight line at any point that he chooses between the end-points representing the low and the high extremes of the variable in question. The variable is treated as a continuum and the subject is unrestricted as to the fineness of the discrimination to be made. Subjects' behavior in the trial of the modified ranking procedure had already demonstrated that the items for judgment employed in the present experiment elicited judgments in terms of continuous gradations from a low to a high degree of the characteristic judged. The administrative simplicity of the graphic scale procedure was a further recommendation for its adoption in the present study, since the items were rated by the subjects on each of several days in order to determine the consistency of the judgments that were expressed.

The first experiment of the present study was concerned with judgments of the social prestige accorded to occupations. The items from which selection was to be made consisted of 225 occupations. The list of items appears in the Appendix. Each item was typewritten on a 3×5 inch card. At the initial experimental session, the subject was presented with the entire set of cards, was shown a sample graphic scale (101 millimeters in length), and was given the following instructions:

I have here a list of occupations which are usually considered to differ in the degree of social prestige attached to them. Your task is to judge the degree of social prestige which these occupations command by placing them along this graphic scale. You are to think of social prestige in terms of the majority opinion of the population at large about a given occupation.

Your first task is to look through the whole series of items and pick out the one or ones which seem to you to have the *highest* social prestige—the highest of all the items in the series—and the one or ones which have the *least* social prestige. The items which you select are to *define for you* the end-points of this graphic scale. The highest social prestige is represented by the end-point at your right and the lowest degree of social prestige by the end-point at your left. In judging the other items later, you are to judge them in relation to these reference points—the top and the bottom of your scale. When you have gone through the series and picked out your reference points, I shall give you further instructions.

\* \* \* \* \*

Now that you have selected these items to serve as reference points to define the top and bottom of your scale, you are to go through the items one by one and decide where each belongs on the scale of social prestige. Use a fresh scale for each judgment. Remember that the scale is a *continuum*. You may use *any point* on the scale, and you may use the same point as many times as you like. You must not assume that there is any sort of frequency distribution of the items. They may be all at one end of the scale, or all at the other end, or distributed in any fashion whatsoever. Simply consider each item carefully and place it where you think it belongs with reference to the end-points you have chosen. If there is doubt in your mind about the interpretation of an occupation, try to select a given interpretation and keep to it consistently. Work carefully; do not hurry.

The graphic scales were mimeographed on small sheets of paper and the subject was provided with a separate scale for each judgment. He recorded his judgment by making a vertical pencil mark at the appropriate point on the scale. All of the items were rated by the subject on each of 5 successive days. The first experimental session required about one hour; the succeeding sessions were rarely longer than one-half hour.

Three subjects served in the experiment. All were graduate students in psychology.

In the second experiment, the items to be rated consisted of 187 samples of behavior selected by the experimenter to cover as wide a range as possible of undesirability. In constructing the items an effort was made to state the situations as concretely and matter-of-factly as possible and to avoid the use of terminology which carried an implied value-judgment. The list of items appears in the Appendix.

The wording of the instructions to the subjects was as follows: "You are to judge the items in terms of how undesirable *you* think these forms of behavior are; you are to think of the items in terms of your own personal feelings about them, not in terms of conventional standards of behavior." The instructions thus called for a judgment in terms of personal values rather than the estimate of



majority valuations demanded in the experiment on the prestige of occupations.<sup>1</sup> In all other respects, the instructions were the same for the two experiments. The graphic rating task was carried out on each of 6 successive days.

Six graduate students in psychology served as subjects in this experiment. Three of them had served earlier as subjects in the first experiment.

It will be noted that the present adaptation of the graphic rating method provides for a preliminary survey of the items to be rated and the selection from them of items whose subjective magnitudes are to define the low and the high extremes of the graphic scale. This procedure has the advantage of providing the subject with a more adequate impression of the range of subjective magnitudes with which he is to deal than does the instruction to let the end-points represent the highest possible and the lowest possible degrees of the characteristic to be judged. In the present study, most of the subjects found the items presented for judgment to cover the complete subjective range of the value-dimensions along which judgments were made; the items selected as end-points actually represented for them the highest and lowest possible degrees of the characteristic in question. The initial anchoring of the scale of judgment in terms of concrete items probably served, therefore, merely to bring about a more rapid stabilization of the scale than would have been the case had the initial anchoring been absent. But in dealing with materials such as these, the experimenter ordinarily has no way of knowing what portion of the subjective range will be covered by the items presented for judgment. The technique that has been described permits the subject to distinguish relative degrees of subjective magnitude in terms of the actual range of magnitudes provided by the items. The technique is applicable to a restricted range of subjective magnitudes as well as to a very wide range.

In assigning an item to a given point on the graphic scale the subject expresses the subjective magnitude of that item relative to the subjective magnitudes of the items that define the end-points of the scale and to those of the other items in the series. These graphic expressions of the relative subjective magnitudes of the items can be converted into numerical terms by measuring the distance of the points at which the items are placed from the low end

---

<sup>1</sup> In the rare instances in which an item seemed to the subject to represent a positively desirable form of behavior, the subject omitted that item.

of the graphic scale. In order to permit a statistical analysis of these data, it can be assumed that equal scale-distances in millimeters represent for the subject equal subjective differences between the items. Insofar as the subject fails to achieve such an equal-unit scale, treatment of the data statistically is subject to error. The results of the experiments to be reported in the following chapters do not, however, depend upon the subject's achievement of a scale of precisely equal units. For our purposes, the mean of the several placements accorded to an item at the successive performances of the rating task affords the best available estimate of the degree of subjective magnitude of that item. The average deviation of the several placements from this mean affords an indication of the consistency or stability of the ratings. On the basis of these measures, items can be selected which have been consistently described as possessing a given degree of subjective magnitude, and the experimenter can require any standard of consistency that he chooses. The specific criteria of selection adopted in the present study will be discussed in the chapters devoted to the main experiments.

In the two experiments that follow, the items selected on the basis of the preliminary graphic scale ratings will be called the *stimulus-items*, and each item's mean rating assigned by the individual subject will be called its *stimulus-value*. The selected stimulus-items will then be presented by the method of Single Stimuli for the subject to judge by assigning each item to some one of six *judgment-categories* or *response-categories*. In other words, the subject is to estimate the magnitude of each item in terms of a *judgment-scale*, or "absolute scale," of six steps or categories. The items selected for an experiment will cover a certain limited *stimulus-range*, or range of stimulus-values. The general purpose of both experiments is to determine the relation of the judgment-scale to the stimulus-range. Anchoring stimuli lying outside the selected stimulus-range will then be introduced and the effects of the anchor on the judgment-scale will be examined.

### CHAPTER III

## ANCHORING EFFECTS IN JUDGMENTS OF THE SOCIAL PRESTIGE OF OCCUPATIONS

### PROBLEM

The experiment described in this chapter is concerned with absolute judgments of the degree of social prestige commanded by occupations. The main problem of the experiment, as has been stated earlier, is that of determining the functional dependence of the position of the subject's judgment-scale on the remoteness of the anchoring value. Judgments of the status accorded to occupations provide a favorable task for the investigation of anchoring effects in the judgment of verbal materials. Since the items to be judged can be stated with a minimum of ambiguity and the dimension of judgment can be defined in a fairly specific manner, there is little likelihood that changes in the object of judgment and the characteristic that is judged will be frequent enough to obscure the effects of anchoring influences. Furthermore, judgments of the social prestige of occupations represent a type of value-judgment which is common in everyday life.

### MATERIALS AND PROCEDURE

On the basis of the data obtained by the graphic rating method described in Chapter II, stimulus-items that were distributed over a determinate range of prestige-value were chosen for each subject; these items were to serve as members of the stimulus-series. In addition, there were chosen for each subject 6 or 8 items to be introduced as anchoring values; these items fell at graded distances above or below the range of values represented by the stimulus-items.

The size of the range of stimulus-values was 30 mm. for all three of the subjects who served in the experiment. The position of the selected range on the graphic scale was determined for each subject by examining the distribution of his mean ratings for the 225 occupations. A range was selected that afforded a large number of items that had elicited stable judgments from day to day. For subjects A and B, the selected range was from 0 to 30 mm. on the graphic scale, and for subject C from 48 to 78 mm.

In selecting the series of stimulus-items, the 30 mm. range was divided into 6 intervals, each 5 mm. in width. A stimulus-series



consisted of 12 items, 2 of which were drawn from each of these 6 intervals. No item was employed whose average deviation from the mean rating for that item was greater than 3 mm. Most of the items had an average deviation of considerably less than this.

Since the plan of the experiment demands that items from the same range of prestige-value be judged with a number of different anchoring values introduced to define the top or bottom category of the subject's judgment-scale, it was considered advisable to construct several equivalent series of items for use with the different anchors. Verbal items of this sort constitute recognizable items, as weights, *e.g.*, do not, and use of the same set of items throughout the experiment might lead to an undesirable stereotypy of response on the part of the subject. Furthermore, use of the same set of items throughout the experiment would leave open the question as to whether any anchoring effects obtained might not be solely a function of the particular items used. There were sufficient items with a suitable mean placement and an average deviation not greater than 3 mm. to permit the construction for each subject of 4 series of 12 items. Other series were constructed by combining items drawn from these series. Thus, for example, one item from each of the 6 intervals was taken from Series 1 and paired with an equivalent item from Series 2 to form a new series. Each series was thus substantially equivalent to every other series in terms of the mean placement of the items along the graphic scale. At the same time, each series confronted the subject with a genuine task of judgment.

For subjects A and B, anchoring items were chosen whose mean ratings on the graphic scale fell at various distances *above* the range of prestige-values (0 to 30 mm.) represented by the stimulus-items. The differences between the top of the range and the values of the several anchoring items were 5, 15, 25, 35, 45, 55, 65, and 70 mm. For subject C, the anchoring items fell *below* the range of prestige-values (48 to 78 mm.) selected for him. The differences between the bottom of the range and the values of the anchoring items chosen for C were 10, 20, 30, 35, 40, and 48 mm. Every item that was chosen to serve as an anchoring value had an average deviation from the mean rating for that item of less than 3 mm.

The experimental sessions were begun two days after the subject had completed the final performance of the graphic rating task described in Chapter II. The experimental sessions alternated between a session without anchoring and a session in which an anchoring value was introduced, until all the anchoring items had

been employed. The various anchoring items were introduced in a random order in succeeding anchoring sessions rather than in an ascending or descending order of remoteness.

In the sessions without anchoring, the subject was required to judge a series of 12 items in 6 absolute categories of social prestige. The instructions that he received were as follows:

The materials which you are to judge will be a series of occupations that vary in the degree of social prestige which they command. They will be presented one at a time and you are to judge the social prestige of each occupation in terms of a scale of six steps, represented by the numbers *one* to *six*. Use the higher numbers for the greater degrees of social prestige and the lower numbers for the lesser degrees of social prestige. Social prestige-value is to be defined, as before, in terms of the *majority* opinion of the population. Report your judgment on each occupation, even though your first few judgments will have to be made without adequate basis.

On the day immediately following, the subject judged the same series of items with further definition of the top (subjects A and B) or the bottom (subject C) category of his judgment-scale by an anchoring value. The instructions for the sessions with anchoring were as follows:

You will be shown a series of occupations that vary in the degree of social prestige which they command. As usual, you are to judge them in terms of a scale of six steps, using the higher numbers for the greater degrees of social prestige and the lower numbers for the lesser degrees of social prestige. Today you will be given an occupation which is to *define* for you step *six* on your scale. Keep this occupation in mind throughout the session. When you report *six* for an occupation you are to mean a degree of social prestige approximately equal to the degree of social prestige commanded by this occupation. Social prestige is to be thought of, as before, in terms of the majority opinion of the population.

For subject C, the instructions were modified to provide for the anchoring of his category One.

In all experimental sessions, the items to be judged were type-written on 3 × 5 inch cards and presented visually. Each of the 12 items was presented 10 times in the course of a session. The order of presentation of the items was random within a "round" of judgments; no item was presented twice until all of the items in the series had been presented. Since 2 items were drawn from each of the 6 intervals into which the stimulus-range was divided, and the 2 items may be considered as roughly equivalent in their relative subjective magnitudes, each pair of items may be treated as a unit. The procedure thus provided for 20 absolute judgments on items drawn from each of the 6 intervals.

## RESULTS AND INTERPRETATIONS

Certain aspects of the results obtained in the sessions without anchoring will first be considered, in order to demonstrate that the absolute judgment of verbal materials along a value-dimension gives rise to an absolute scale that exhibits the characteristic features of such scales.

Even in the very first experimental session it was evident that the six categories were already being used with some consistency and that each subject was very quickly developing a scale conforming to the presented range of stimulus-values. This conformity became perfectly evident from the distribution of judgments rendered in the sessions without prescribed anchoring.

Table I presents the frequency with which each of the six categories of judgment was attributed to the items from each of the six stimulus-intervals in the sessions without anchoring. For convenience in treating the data, all of the items drawn from a given interval are considered as having the stimulus-value represented by the midpoint of that interval. In constructing Table I, the number of times that an item of a given stimulus-value evoked a given category of response was placed in the square made by the stimulus-value in the column at the left and the category of response in the row at the top. Thus for Subject A, for example, items having the stimulus-value of 2.5 were assigned 140 times to category One, 20 times to category Two, and were never assigned to the other categories. The total number of times each stimulus-value was presented for judgment is entered in the column at the right; the total number of times each category was used, regardless of the particular stimulus-values to which it was assigned, is entered in the row at the bottom.

From these raw frequencies, it can be seen that the categories of response are distributed over the various stimulus-values in such a fashion that the lower categories tend to be used in connection with the lower stimulus-values and the higher categories in connection with the higher stimulus-values. The scale of judgment that is built up as a consequence of experience with the presented items is not, however, fixed in position but shifts up and down to some extent and expands and contracts in width. Hence there is variability in the judgments rendered on the same stimulus-items; the same stimulus-value may sometimes be called Two, sometimes Three, and sometimes Four.



Separate tabulations of the judgments rendered in each of the several sessions show the same type of distribution of judgments; each new series of items presented for judgment gave rise to an absolute scale.

The treatment of psychophysical judgments obtained by the method of Single Stimuli typically involves the determination of

TABLE I  
DISTRIBUTION OF THE CATEGORIES OF RESPONSE WITH RESPECT TO THE  
STIMULUS-VALUE OF THE ITEMS

Response-Category							
Stimulus- Value of Items	1	2	3	4	5	6	Total
Subject A							
2.5	140	20	0	0	0	0	160
7.5	11	101	48	0	0	0	160
12.5	0	6	120	34	0	0	160
17.5	0	2	35	117	6	0	160
22.5	0	0	3	43	113	1	160
27.5	0	0	1	2	31	126	160
Total	151	129	207	196	150	127	960
Subject B							
2.5	153	7	0	0	0	0	160
7.5	28	118	14	0	0	0	160
12.5	0	101	59	0	0	0	160
17.5	0	36	116	8	0	0	160
22.5	0	4	38	105	13	0	160
27.5	0	0	2	4	74	80	160
Total	181	266	229	117	87	80	960
Subject C							
50.5	67	48	5	0	0	0	120
55.5	6	75	37	2	0	0	120
60.5	0	31	60	28	1	0	120
65.5	0	0	21	94	5	0	120
70.5	0	0	0	24	95	1	120
75.5	0	0	0	0	19	101	120
Total	73	154	123	148	120	102	720

the category-thresholds for the several categories of response (see above, p. 11). These category-thresholds are determined in terms of stimulus-units, or, sometimes, in terms of units of subjective magnitude. In the present experiment, category-thresholds are expressed in terms of the graphic scale-values of the items which are designated as the "stimulus-values."

Category-thresholds may be determined graphically by constructing a series of curves or functions, showing how the relative frequency of use of the categories changes with change in the magnitude of the stimulus-items. The raw frequencies for each stimulus-value (as given in Table I) are converted into relative frequencies by dividing the number in each cell by the total number of times that stimulus-value was presented (the row total). The relative frequencies thus obtained are then cumulated along each row; in the present case, they were cumulated from the higher to the lower categories.

Subject B's category Three may be taken as an example. From the judgments in Table I, it may be seen that:

Stimulus-values of 2.5 were never called Three or higher.

Stimulus-values of 7.5 were called Three or higher 14/160 or 9% of the times presented.

Stimulus-values of 12.5 were called Three or higher 59/160 or 37% of the time.

Stimulus-values of 17.5 were called Three or higher  $(8 + 116)/160$  or 78% of the time.

Stimulus-values of 22.5 were called Three or higher  $(13 + 105 + 38)/160$  or 98% of the time.

Stimulus-values of 27.5 were called Three or higher  $(80 + 74 + 4 + 2)/160$  or 100% of the time.

A plot for each category of response is then constructed, with the stimulus-values of the items on the abscissa, percents on the ordinate, and the category as the other parameter. Figure 1 presents such a system of functions for Subject B for the sessions without anchoring; the data are those tabulated in Table I. A given point on one of these functions indicates the relative frequency with which a category at least as large as that for which the function is plotted will be attributed to a stimulus-value of that point. The function as a whole describes the rate at which such relative frequencies will increase as a function of increasing the stimulus-value of the items. The 50% point on the function, the category-threshold, is that stimulus-value to which the subject would assign the category, or some category larger than it, 50% of the times that the stimulus-value was presented.

There are other instructive ways of treating the data. The Mean judgment for each stimulus-value can be computed from the separate horizontal rows in Table I. And from the vertical columns the Mean and distribution of the stimuli evoking a given response-

category can be computed. These methods will be found useful in examining the anchoring effects of items introduced to define the top or bottom category of the judgment-scale.

It is apparent from Table I and Figure 1 that the mental formation described in terms of the categories of response bears a regular and orderly relation to the independently determined stimulus-values. The preliminary scaling of the items by means of the graphic rating technique was evidently successful in providing an ordered series of subjective magnitudes. Were this a weight-lifting

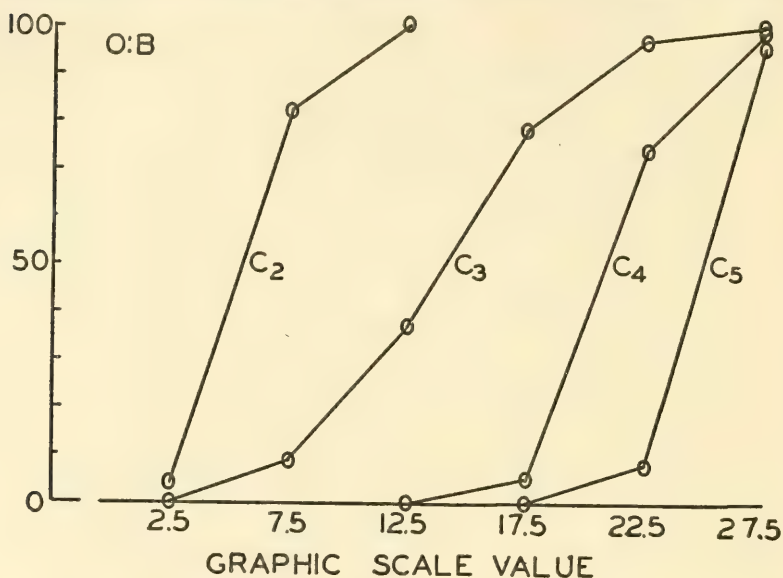


FIG. 1. Cumulative percent frequency of response-categories in judgments of the social prestige of occupations. This figure shows the manner in which the various categories of response were used in connection with the graphic scale values, or stimulus-values, of the items presented for judgment in the sessions without anchoring. The data are those of subject B from Table I.

experiment, it might be said that the absolute scale was "stimulus-anchored."

It can readily be seen from inspection of Table I that the subjects differed in their use of the several categories of response. Both subjects A and B judged items drawn from a low range of stimulus-values and both subjects show a tendency to use the higher categories in the scale less frequently than the lower categories. This tendency is, however, much more marked in the case of subject B. Her judgment-scale, as can be seen clearly in Figure 1, is displaced somewhat upward with reference to the range of values provided



by the stimulus-items, and the several categories of judgment are not equal in width. Nevertheless, it can still be said that her judgment-scale is anchored by the range of values provided by the items in the series.

The subjects' reports concerning the manner in which they went about the task of judging the presented occupations in six categories of prestige provide considerable insight into the process of absolute judgment of meaningful materials such as these, and into the manner in which an absolute scale develops through experience with the presented series of stimulus-items.

An outstanding feature of the reports of all three of the subjects is the important rôle played by the end-items in the establishment of the scale of judgment. The importance of the end-stimuli in the anchoring of a scale has been noted frequently in the judgment of psychophysical materials. The fact that the objects of judgment in the present experiment were specifically recognizable by the subject, in a fashion that weights or tones are not, appears to lead to an even greater importance of the end-items in the establishment of the absolute scale. All of the subjects reported that in the first few presentations of each new series of items, they looked for the "Sixes" and the "Ones." Once the end-categories of the scale were well-defined, the remaining items tended to sort themselves out along the scale.

The subjects assumed that satisfactory accomplishment of the task set by the instructions demanded that the categories be equal in width, and sometimes reported dissatisfaction with their lack of success in achieving such equality. Thus subject B, whose scale of judgment was, as we have seen, somewhat displaced, frequently complained, "My category Three is too wide; I have too many people in it and too little in Five and Six, but I can't seem to help it." In general, the subjects' conception of the scale in terms of which they were judging was that of a linear series of categories. This was clear from the occasional diagrams drawn to show the experimenter the location of the items on the judgment-scale and from the introspective reports. Thus it would frequently be reported that "this is a low Five, just over the border from Four," or "I have both fisherman and trapper in category Three but one is at the top and the other at the bottom of Three."

Intraserial effects, or the influence on a judgment of the preceding judgments, were apparent chiefly in the earlier rounds of a session before stabilization of the scale had taken place. A subject

would report, for example, "I just called taxi driver Five, so plumber will have to be Six this time, though I think he was in Five last time." By the end of seven or eight rounds of presentation of the twelve occupations in a given series, or even earlier, the impression of the series was so definite that intraserial effects were minimized, and, in general, relatively few changes in judgment on a given item occurred.

The reports of the subjects, as well as the judgments obtained in the earliest rounds of the first experimental session, indicate that the first few judgments were markedly influenced by the subject's impression of the range of prestige-values the series might be expected to provide. Neither subject A nor subject B used category Six or category Five in the earliest round, and they reported that they had expected a somewhat wider range of prestige-values. Similarly, subject C, whose range occupied a higher portion of the total prestige-scale, did not use category One or Two in the initial round. All three subjects, however, adjusted themselves immediately to the presented range.

There is evidence in the series of judgments obtained in the separate sessions without anchoring that the absolute scale tends to carry over from day to day. Once the subjects gathered that the items for judgment represented a low or high level of prestige-values, they lost the tendency to assign the items exclusively to one portion of the scale of judgment in the first round of the day's work. As each new series was presented, the subjects looked for Sixes and Ones in terms of the familiar range.

Occasional difficulty was reported in keeping one's personal attitude toward an occupation from influencing one's attempt to judge the occupation in terms of the social prestige accorded it by the majority of the population. Thus subject C reported that he was afraid he was placing "research chemist" too high as a result of his personal evaluation of the profession. The other subjects also reported that certain occupations tended to "slip up" on the scale as a consequence of personal attitudes. On the whole, however, the difficulties reported by the subjects seem to have been more or less confined to specific occupations and it is improbable that the results as a whole were distorted thereby.

It has been shown in the preceding discussion that the series of stimulus-items selected on the basis of preliminary determinations of their relative values gave rise to absolute scales that exhibit the characteristic features of such scales. The data obtained in the

sessions in which an anchoring value was introduced to define one extreme of the subject's scale of judgment indicate that as the anchoring value becomes more distant from the range provided by the stimulus-items, the frequency of judgment in the categories nearest the anchoring value decreases and that, correspondingly, the frequency of judgment in the categories farthest from the anchoring value increases. Thus, if the anchoring value is above the range of prestige-values provided by the occupations in the stimulus-series, the frequency of judgment in category Six may drop to zero and the items that evoked judgments of Six when the scale was anchored only in terms of the stimulus-series are displaced toward the lower end of the absolute scale. For example, "traffic policeman," originally assigned to category Six, may be judged as Three when "college professor" is introduced to define the subject's category Six on the scale of social prestige.

As will be shown in more detail later, it may be inferred from these changes in judgment that the absolute scale extends in the direction of the anchoring value. The stimulus-range is covered by a smaller and smaller portion of the judgment-scale as the subject is told that category Six, previously defined by the occupation of "machinist" is now to be defined by "doctor" or "opera singer." The subject is unable to use the higher categories, since no items in the stimulus-series now satisfy his changed criteria for a Six or a Five. The categories that are still used become wider and the whole scale of categories extends.

In treating the data obtained in the sessions in which an anchoring value was introduced, the first type of analysis to which the data have been subjected consists of determining the mean stimulus-value of the items that evoked judgments in each of the categories used by the subject in a given session of judgment. Thus, *e.g.*, all the judgments One are grouped together and the mean stimulus-value of the items that were called One computed.<sup>1</sup>

This type of analysis has been used by Long (25) in a study of the judgment of auditory intensities. In his study, pairs of tones were presented, the value of the standard (*e.g.*, 30 decibels) always being known to the subject. The subject was asked to judge the variables in terms of absolute units, *i.e.*, they were to judge the

---

<sup>1</sup> It was not feasible to determine the category-thresholds for the several categories of judgment in the sessions with anchoring, since "a category-threshold cannot be determined unless the cumulative frequency (in percent) of judgments in that category lies between 0 and 100 at more than one stimulus-magnitude" (29, p. 18n). Very often, this requirement was not met by the data of the present experiment.



variable as 20, 22, 24, *etc.* Assuming that "when any variable is judged, say 20, the momentary subjective location of the 20 db. point on the subjective scale is revealed" (25, p. 48), the determination of the mean objective values that evoked the several categories of response used by the subject provided a means of relating the subject's scale of judgment to the objective scale of stimulus-values. In the present experiment, while the graphic scale-values of the items

TABLE II  
THE MEAN OF THE STIMULUS-VALUES TO WHICH THE SIX ABSOLUTE  
CATEGORIES ARE ASSIGNED

Category	Without Anchor	Distance of Anchoring Value (in mm.)							
		5	15	25	35	45	55	65	70
<i>Subject A</i> (Stimulus-range 0-30; anchor above)									
1	2.9	2.5	3.2	3.9	4.2	4.2	6.4	6.6	6.6
2	7.1	5.9	6.7	10.3	11.3	13.6	17.2	17.4	18.5
3	12.4	14.9	14.8	16.7	19.1	20.3	25.5	25.3	27.5
4	17.8	21.2	23.6	25.1	27.5	27.5			
5	23.3	24.9	25.5	27.5					
6	27.5	27.5	27.5						
<i>Subject B</i> (Stimulus-range 0-30; anchor above)									
1	3.3	4.2	4.9	6.7	7.1	8.7	11.3	11.4	12.5
2	10.8	10.8	15.3	17.7	18.3	20.6	25.7	25.8	27.5
3	16.5	18.2	21.8	25.2	27.5	27.5			
4	22.3	23.0	27.5	27.5	27.5				
5	26.8	27.5	27.5	27.5					
6	27.5								
<hr/>									
		10	20	30	35	40	48		
<hr/>									
<i>Subject C</i> (Stimulus-range 48-78; anchor below)									
1	50.9								
2	54.9	52.2	50.5	50.5					
3	59.4	59.3	55.4	53.8	52.4				
4	65.2	64.4	63.1	60.5	59.1	52.9			
5	71.0	70.0	68.8	67.5	67.2	61.6	55.5		
6	75.5	75.5	74.7	74.1	73.8	71.3	70.5		

in the stimulus-series do not constitute an objective scale, they express in terms of millimeters the relative subjective magnitudes of the items. Thus we can assume that when the subject assigns an item whose graphic scale-value is 17.5 to category Three his third category includes that magnitude. The means of the "stimulus-values" or graphic scale-values evoking each of the categories used in a given session afford a description of the position and width of the subject's several categories of judgment with respect to the

range of values provided by the stimulus-series. Changes in these means as the anchoring value recedes indicate changes in the subject's scale of judgment.

The effect of the different anchoring values on the subject's scale of judgment is shown in Table II, where the mean of the stimulus-values to which each category of judgment was assigned is tabulated for each of the sessions with anchoring. The means presented in the left-hand column of the table were computed on the basis of the judgments obtained in all the sessions without anchoring, combined, and may serve as a point of reference for evaluating the effect of anchoring values located at different distances from the range of values provided by the stimulus-series. For subjects A and B, occupations that fell at various distances *above* the range provided by the stimulus-series were introduced to define category Six on the subject's scale of judgment. It can be seen that as the anchoring value recedes from the range, the top categories of the subject's scale are no longer used and there is a rise in the mean stimulus-value of the items that are assigned to those categories that are used by the subject. Thus, for example, in the case of subject B, the mean value of the items judged Two in the sessions without anchoring is 10.8 but as the anchoring value recedes the mean rises until when the anchoring value is 65 mm. distant it is 25.8. The subject was using only two categories in this session and the category Two was assigned only to items of the top two stimulus-values. For subject C, anchoring was at the bottom of the absolute scale, and the anchoring effect is discernible in the fall of the mean stimulus-values that evoke the several categories of judgment.

It should be pointed out that the mean of the stimulus-values assigned to the highest category that subject A or B is using in any given session (or the lowest in the case of subject C) is subject to the operation of an end-error. Since there are no items in the series with a stimulus-value greater than 27.5 for A and B, the mean of the stimulus-values for a given category cannot rise above that value, although it is highly probable that had there been items whose values were greater than 27.5 they would have been assigned to that category. As a consequence of the upper limit of the range of values presented for judgment, the position of the top category in the scale of judgment cannot be located. When the mean stimulus-value of those assigned, let us say, to category Three is 27.5, we can say that the absolute scale has been extended so that Three includes *at least* that great a value, but we have no means of determining how much greater an extension of the scale actually obtains.

It can be seen from Table II that for all three subjects the same sort of extension of the scale of judgment takes place that typically

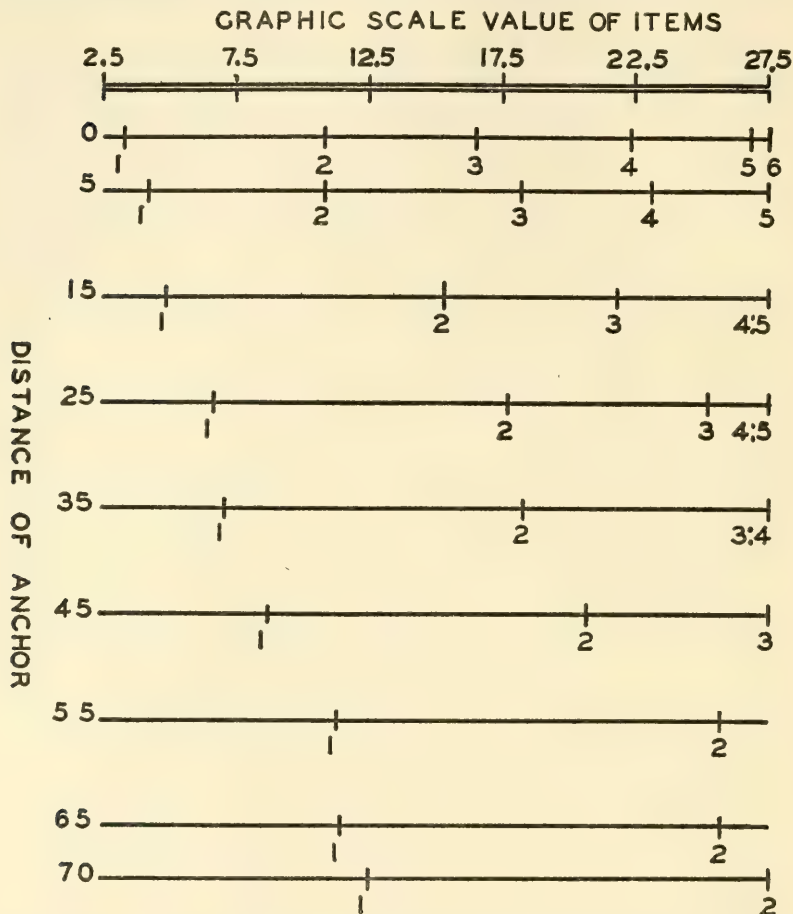


FIG. 2. Mean stimulus-value assigned to each category (1, 2, 3, 4, 5, 6) of the absolute scale of social prestige of occupations. This figure shows the relation of the various categories of the absolute scale to the values of the stimulus-items marked off on the abscissa at the top of the figure. An absolute scale has been constructed for the sessions without anchoring and for the sessions with each value of the anchor. The mean of those stimulus-values (graphic scale-values) that evoked each of the categories has been marked off on the scale and labelled with the appropriate category-number. Taking the scale corresponding to the sessions without anchoring as zero, the scales corresponding to the various anchoring values have been spaced according to the distance of the anchors from the top of the range of values provided by the stimulus-series. The data are those of subject B, Table II.

follows the introduction of an anchoring value lying outside the stimulus-range. Furthermore, the increase in the extension of the



scale as the anchoring value becomes more distant is strikingly regular.

The essential facts can be more clearly discerned in Figure 2. In this figure, graphic representations of subject B's scale of judgment in the sessions without anchoring and in each of the sessions with anchoring have been constructed. The means of the stimulus-values of the items assigned to each of the categories used in a given session are located on these scales. The extension of the scale as the anchoring value recedes is shown by the increasing distance between the points on the scale that represent categories One, Two, *etc.*

If Figure 2 is turned on its side so that the distance of the anchoring value appears on the abscissa and the values of the items in the stimulus-series on the ordinate, imaginary lines may be drawn to connect the points that indicate the mean of those stimulus-values to which categories One, Two, *etc.*, were assigned. In this position, the figure shows the rise in the mean stimulus-value assigned to the several categories as a function of the distance of the anchoring value.

It will be recalled that Rogers (29) found evidence indicating that the anchoring effect, measured in terms of category-thresholds, was a rectilinear function of the distance of the anchoring value from the stimulus-range up to a certain point, where there was a break in the function. Some indications of a similar discontinuity are found in the data of the present experiment. Inspection of Table II and of Figure 2 indicates that for subject B, the rise in the mean stimulus-value of the items assigned to categories One, Two, and Three tends to be rectilinear up to a distance of the anchoring value of 45 mm. At the next greater value of the anchoring item, a distance of 55 mm., there is a sharper rise in the means for categories One and Two than had occurred hitherto and the location of category Three can no longer be determined since the subject no longer uses it. No further extension of the scale takes place at the anchoring value 65 mm. distant from the range; the means for categories One and Two are unchanged. At the anchoring value that is 70 mm. distant from the range, a further extension of the scale takes place. In the case of subject A, the extension of the scale is regular up to an anchoring value that is 45 mm. distant from the range. Between anchoring values 45 mm. and 55 mm. distant there is a greater increase in the width of the scale. Thereafter the scale remains extended but shows little further change until the anchoring value is 70 mm. distant. The data of subject C show some evi-

dence of a break in the function between the anchoring values that are 35 and 40 mm. away from the bottom of the range of values provided by the stimulus-items. At this point, a sudden extension of the scale occurs, and thereafter the scale extends again when the most distant anchoring value (48 mm.) is introduced.

Another way of demonstrating the changes in the absolute scale that follow upon the introduction of anchoring values is that of treating the categories of the judgment-scale as numbers, and computing the mean of the category-numbers assigned by the subject to each of the stimulus-values presented for judgment. Comparison of the mean category-numbers assigned to the several stimulus-values in sessions without anchoring and in sessions with anchoring affords a basis for determining the shifts in the subject's scale of judgment.

In Table III, the means of the category-numbers assigned to items of each stimulus-value are tabulated separately for each experimental session for all three subjects. In the left-hand column are tabulated the stimulus-values of the items in the stimulus-series used for the subject whose mean judgments are presented in the adjacent columns. Reading across the upper part of that section of the table devoted to a particular subject, the means of the category-numbers assigned to each stimulus-value in the several sessions without anchoring can be compared. Reading across the lower part of the table for each subject, the means obtained for each stimulus-value when anchoring values of the several distances are introduced can be compared. Reading down the table, any column of figures presents the mean judgments rendered on the items of the several stimulus-values during a given session. Each session without anchoring is tabulated directly above the companion session in which an anchoring value was introduced. The differences between the mean category-number assigned to the several stimulus-values under the two conditions affords a direct indication of the shifts in the subject's judgment of the same items as a consequence of the introduction of an anchoring item.

It can be seen in Table III that this type of analysis of the data provides further evidence of the regular extension of the absolute scale as a function of the remoteness of the anchoring value, and further evidence for the existence of the discontinuity in the function that was noted earlier. In the case of subject B, the rather sudden extension of the scale of judgment that seems to occur between anchoring values 45 mm. and 55 mm. distant from the range





of values in the stimulus-series is evidenced by a sudden fall in the mean category-number assigned to items drawn from the top three intervals of the stimulus-range. This finding is presented graphically in Figure 3 where the mean category-numbers assigned to each of the several stimulus-values are plotted as a function of the re-

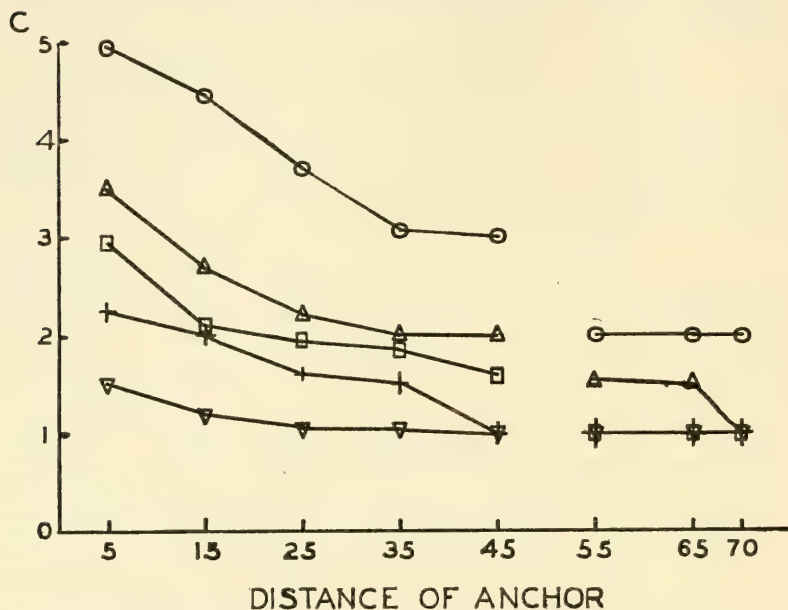


FIG. 3. Mean category-number (C) assigned to each stimulus-value in judging the social prestige of occupations. This figure shows the influence of the various anchoring values upon the category-numbers assigned to items of the several stimulus-values. The points plotted in this figure represent the mean of the category-numbers assigned by subject B, Table III, to each of the stimulus-values in each of the sessions with anchoring. The abscissa values indicate the remoteness of the various anchors from the upper end of the stimulus-range. The various stimulus-values of the items, the other parameter, are represented as follows:

- 27.5
- △ 22.5
- 17.5
- + 12.5
- ▽ 7.5

Items whose stimulus-value was 2.5 were assigned a mean category of 1.00 in every session and, for purposes of clarity, they are omitted from the figure.

moteness of the anchoring value. For subject A, also, an abrupt change occurs in the scale of judgment between the anchoring values that were 45 mm. and 55 mm. distant from the range. The mean category-numbers assigned to all the stimulus-values except 2.5 exhibit a drop at this point. Similarly, subject C's scale undergoes a large extension at the anchoring value 40 mm. distant from

his range; the mean category-numbers assigned to the lower stimulus-values show a sudden rise.

The mean of all the category-numbers assigned to the entire series of stimulus-items during a given session affords another indication of the location of the subject's absolute scale with reference to the range of values provided by the stimulus-items. When the subject uses all the categories equally often, or symmetrically, his average judgment will obviously be 3.5, the average of the numbers 1-6. As can be seen in Table IV, subjects A and C, in the sessions

TABLE IV

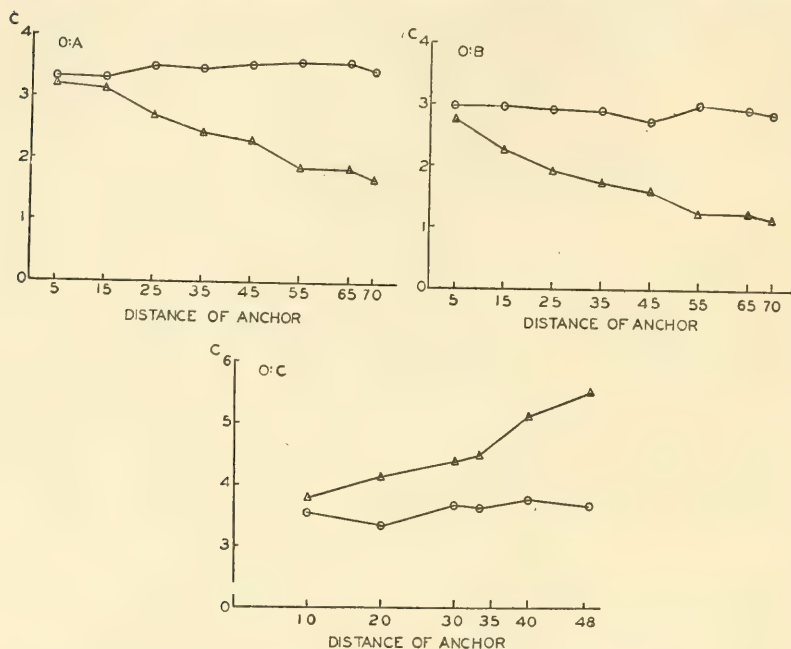
ABSOLUTE JUDGMENTS MADE IN SESSIONS WITHOUT AND WITH ANCHORING:  
THE MEAN OF ALL THE CATEGORY-NUMBERS ASSIGNED TO THE  
SERIES OF ITEMS IN EACH EXPERIMENTAL SESSION

Sessions	Distance of Anchoring Value (in mm.)							
	5	15	25	35	45	55	65	70
<i>Subject A (Anchors above range)</i>								
Without Anchor .....	3.33	3.33	3.49	3.46	3.56	3.58	3.57	3.43
With Anchor .....	3.27	3.13	2.71	2.43	2.33	1.86	1.85	1.67
<i>Subject B (Anchors above range)</i>								
Without Anchor .....	2.98	2.94	2.91	2.91	2.73	2.97	2.93	2.83
With Anchor .....	2.69	2.24	1.92	1.74	1.60	1.26	1.25	1.17
<i>Subject C (Anchors below range)</i>								
	10	20	30	35	40	48		
Without Anchor .....	3.53	3.34	3.66	3.62	3.77	3.67		
With Anchor .....	3.78	4.11	4.35	4.48	5.12	5.50		

without anchoring approximated this average judgment, while B's average is somewhat lower because, as noted above (p. 38 and Table I), she did not manage to use the upper categories as much as the lower. When the subject's scale of judgment is extended upward toward an anchoring value, it tends to "move past" the stimulus-items so that the upper categories are less used and the mean judgment goes down, as is clearly seen in Table IV. The descent of the mean judgment is an index of the upward extension of the absolute scale.

In Figures 4, 5, and 6, the mean category-numbers assigned to the several series of items are plotted as a function of the distance of the anchoring value. In these figures, as well as in Table IV, it is obvious that there are only negligible differences between the

mean category-numbers assigned in the sessions without anchoring. This fact indicates that the absolute scales established for each new series of items tended to be very much alike from session to session. It is also apparent in the figures that the mean category-number assigned to a given series when an anchoring value is introduced is a function of the remoteness of the anchoring value. For subjects



FIGS. 4, 5, and 6. Mean category-number (C) assigned to the entire series of stimulus-items in judging the social prestige of occupations. These figures are intended to show the location of the stimulus-range with respect to the subject's absolute scale as a function of the remoteness of the anchoring values used in the various experimental sessions. Each of the plotted points represents the mean of all the category-numbers assigned to the entire series of stimulus-items during an experimental session. The different anchoring values are arranged on the abscissa and the mean category assignment on the ordinate. Together with each of the means for sessions with an anchor (triangles) is plotted the mean for the same series of stimulus-items without anchoring (circles); the difference, then, between the circles and the triangles for a given anchoring value may be taken as an indicator of the influence of that anchoring value. The data are from Table IV.

A and B, the mean category-number falls as the anchoring value recedes. As the absolute scale extends upward toward the anchoring value, it "moves past" the stimulus-items and the latter are assigned only to the lower categories. In the case of subject C, the rise in the mean category-number assigned to the series as the



anchoring value recedes indicates the extension of the scale downward toward the anchoring value.

The discontinuity that is suspected to obtain in the functional relation between the position and width of the subject's scale of judgment and the remoteness of the anchoring value shows up less clearly in this treatment of the data than in the treatment in which the mean category-numbers assigned to each of the stimulus-values separately were plotted as a function of the remoteness of the anchoring value (Figure 3). Nevertheless, the locus of the break that is believed to occur is still visible in Figures 4, 5, and 6.

All of the subjects reported that it was easier to judge the occupations when there was an anchoring value introduced to define the end-category of the scale provided that the anchoring value was not too far away from the range provided by the stimulus-series. With the more distant anchors, the task became very difficult and the subjects were dissatisfied with their scales. All of the subjects remarked on their dislike of the necessity of "putting all these people who really don't belong together into the same category" and they constantly complained that "Six just isn't enough categories; I can't stretch it that far except by putting everybody into the same category." The introspections of the subjects do not indicate, however, any particular change in the approach to the judgment-task at that point where a break in the functional relation apparently occurs.

It will be recalled that Rogers (29) interprets the breaks found in the functions of his subjects in terms of the loss in effectiveness of one of the three major anchoring influences—the top and bottom stimuli and the anchoring stimulus. He suggests that beyond the region of rectilinearity of the function, one or more of the principal anchoring influences may suffer a loss and that the trend in the function after the break may well reflect this loss. In terms of his analysis, it may be said that in the case of the subjects in the present experiment, it was apparently the bottom anchoring agent that suffered a loss. The location of category One with respect to the range provided by the stimulus-series tends to rise sharply at the point where the break is suspected for subjects A and B, and the location of categories Four and Five falls sharply in the case of subject C. In Rogers's terminology, the scale tends to "pull loose at the bottom" as the limit of regular upward extension of the scale is reached.

# CHAPTER IV

## ANCHORING EFFECTS IN JUDGMENTS OF THE UNDESIRABILITY OF FORMS OF BEHAVIOR

### PROBLEM

One of our primary interests in undertaking this whole study was that of investigating the extent to which the functional relation that obtains between the position of the absolute scale and the remoteness of the anchoring value is a general principle that is independent of the particular stimulus-material employed and of the particular characteristic that is judged. The plan of the experiment described in the present chapter is identical with that of the experiment described in the preceding chapter. The objects for judgment consisted of samples of social behavior to be judged in terms of their undesirability. This particular dimension was chosen as representative of the kind of value-judgment that is more personal and less objective than the judgment of the degree of social prestige commanded by occupations. Whereas the latter judgment demanded that the subject make an estimate of majority opinion, the instruction to judge samples of behavior in terms of how undesirable they seem to the individual subject requires a judgment that reflects the personal set of values. If the trend of the results points in the same direction as in the first experiment, it would seem possible to conclude that the findings are characteristic of value-judgments in general.

### MATERIALS AND PROCEDURE

Since the technique of selection of items and the experimental procedure duplicated those of the experiment on the judgment of the social prestige of occupations, they are merely summarized here.

On the basis of the graphic ratings of the samples of social behavior described in Chapter II, stimulus-items were chosen from a determinate range of undesirability to serve as members of the stimulus-series. Items to serve as anchoring values were likewise chosen for each subject. No item was employed in either capacity whose average deviation from the mean rating for that item was more than 3 mm. For some subjects, the number of available items was considerably limited by this requirement, since the variability of the ratings from day to day tended to be greater for these materials than the variability encountered in the judgment of the social prestige of occupations.

The range of values chosen for each subject and the distances of the anchoring values from that range were as follows:

<i>Subject</i>	<i>Range</i>	<i>Distance of Anchoring Values</i>
A	70-100 mm.	10, 20, 30, 40, 50, 60, 65 mm.; anchoring below.
B	0-30	10, 20, 30, 35, 40, 50, 60, 65 mm.; anchoring above.
C	5-35	10, 15, 20, 30, 40, 50, 55 mm.; anchoring above.
D	0-30	15, 20, 30, 40, 50, 55, 65, 68 mm.; anchoring above.
E	0-30	10, 20, 30, 40, 50, 60, 65, 70 mm.; anchoring above.
F	50-80	5, 10, 20, 30, 35, 40, 45, 50 mm.; anchoring below.

In selecting the series of stimulus-items, the 30 mm. range was divided into 6 intervals, each 5 mm. in width, and 2 items were drawn from each of these 6 intervals. Four such series of 12 items were constructed for each subject, and other series were constructed from these by the appropriate pairing of items from the same interval.

The experimental sessions began two days after the subject had finished the graphic rating task described in Chapter II. Sessions without anchoring alternated with sessions in which an anchoring value was introduced. The anchoring values were introduced in random order in succeeding sessions.

The instructions to the subject for the sessions without anchoring and with anchoring follow:

The materials which you are to judge will be a series of samples of undesirable forms of behavior that vary in the degree of undesirability that they represent. They are to be presented one at a time and you are to judge the undesirability of each in terms of a scale of six steps, represented by the numbers *One* to *Six*. Use the higher numbers for the greater degrees of undesirability and the lower numbers for the lesser degrees of undesirability. Make your judgments in terms of your own personal opinion. Report your judgment on each item even though your first few judgments will have to be made without adequate basis.

\* \* \* \* \*

You will be shown a series of samples of behavior which vary in the degree of undesirability that they represent. As usual, you are to judge them in terms of a scale of six steps, using the higher numbers for the more undesirable forms of behavior and the lower numbers for the less undesirable. Today you will be given an item which is to define for you step *six* on your scale. Keep this item in mind throughout the session. When you report *six* for an item, you are to mean a degree of undesirability approximately equal to the degree of undesirability represented, in your opinion, by this item.

The instructions were appropriately modified for subjects A and F whose category *One* was anchored by items whose values were below the range provided by the stimulus-series.



TABLE V  
DISTRIBUTION OF CATEGORIES OF RESPONSE WITH RESPECT TO THE  
STIMULUS-VALUE OF THE ITEMS

	Response-Category						
Stimulus- Value of Items	1	2	3	4	5	6	Total
Subject A							
72.5	68	35	33	3	1	0	140
77.5	1	28	85	25	1	0	140
82.5	0	0	32	85	23	0	140
87.5	0	0	3	41	95	1	140
92.5	0	0	0	8	121	11	140
97.5	0	0	0	1	52	87	140
Total	69	63	153	163	293	99	840
Subject B							
2.5	151	9	0	0	0	0	160
7.5	38	114	8	0	0	0	160
12.5	0	90	67	3	0	0	160
17.5	0	34	109	14	3	0	160
22.5	0	0	27	86	47	0	160
27.5	0	0	6	9	73	72	160
Total	189	247	217	112	123	72	960
Subject C							
7.5	82	54	4	0	0	0	140
12.5	1	125	14	0	0	0	140
17.5	1	13	111	15	0	0	140
22.5	0	7	72	61	0	0	140
27.5	0	3	4	52	81	0	140
32.5	0	0	3	4	34	99	140
Total	84	202	208	132	115	99	840
Subject D							
2.5	154	6	0	0	0	0	160
7.5	119	41	0	0	0	0	160
12.5	14	127	19	0	0	0	160
17.5	1	31	109	19	0	0	160
22.5	0	2	42	102	14	0	160
27.5	0	0	3	18	64	75	160
Total	288	207	173	139	78	75	960
Subject E							
2.5	132	28	0	0	0	0	160
7.5	5	80	67	8	0	0	160
12.5	0	21	114	19	6	0	160
17.5	0	0	33	105	22	0	160
22.5	0	0	0	32	108	20	160
27.5	0	0	0	2	63	95	160
Total	137	129	214	166	199	115	960

TABLE V—(Cont.)

Stimulus- Value of Items	Response-Category						Total
	1	2	3	4	5	6	
	<i>Subject F</i>						
52.5	79	71	9	1	0	0	160
57.5	9	74	68	9	0	0	160
62.5	0	6	126	28	0	0	160
67.5	0	4	51	71	32	2	160
72.5	0	0	4	39	91	26	160
77.5	0	0	4	12	49	95	160
Total	88	155	262	160	172	123	960

In all experimental sessions, the items, typewritten on cards, were presented visually. Each item was presented 10 times in random order in the course of a session; thus there were 20 absolute judgments rendered in each session on items drawn from the 6 intervals.

#### RESULTS AND INTERPRETATIONS

From the way in which the six categories of judgment were used in connection with the various stimulus-values of the items presented for judgment without anchoring, it is evident that, for all of the subjects, experience with the presented series of items resulted in the establishment of an absolute scale. Table V presents the frequency with which each of the subjects assigned the various categories to items drawn from each of the six intervals. As was done in treating the data of the experiment on occupations, all of the items drawn from a given interval are considered as having the stimulus-value represented by the midpoint of that interval. The raw frequencies in Table V indicate that each subject used the six categories required by the instructions in such a fashion that the scale of judgment is "stimulus-anchored," *i.e.*, it tends to conform to whatever level of undesirability is represented by the particular range of values presented for judgment. Figure 7, based on the method of treatment of the data described in Chapter III, p. 37, shows how the relative frequency of use of the several categories by subject D changes with change in the stimulus-value of the items.

All of the subjects, except subject A, easily used the six categories demanded by the instructions. Occasionally, one of them would complain that a specific series "was hard to stretch out into six," but, in general, the selected ranges were entirely satisfactory.

Subject A, however, had consistent difficulty in using the six categories, and would "lose" a category (usually Two or Three) much more frequently than the other subjects. Her difficulty seemed partly a consequence of the fact that the range selected for her was from 70 to 100 mm., the highest (worst) portion of her total scale. This range was selected because it contained the greatest concentration of ratings of the items; most of the items seemed to the subject to be very undesirable indeed. During the experimental sessions, she reported very often, "I hate to call these awful things

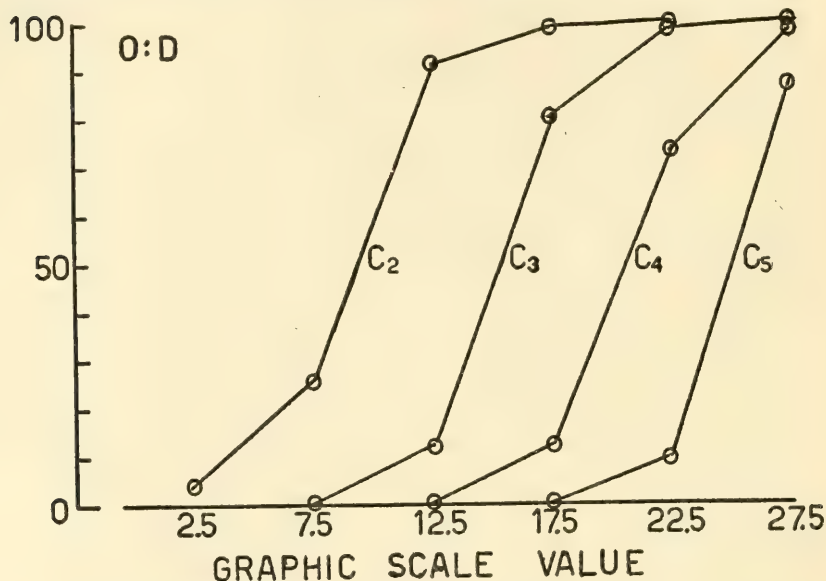


FIG. 7. Cumulative percent frequency of response-categories in judgments of the undesirability of forms of behavior. This figure shows the manner in which the various categories of response were used in connection with the graphic scale-values, or stimulus-values, of the items presented for judgment in the sessions without anchoring. The data are those of subject D from Table V.

only 'One' or 'Two'"; and, "I try each one out to see if I can get it lower." Subjects B and D show some of the contrary tendency (see Table V), probably because judging the least objectionable items of behavior. The reluctance of the subject to deal with the presented group of values in isolation from the total potential range of values may evidently play a fairly prominent rôle in determining the degree of conformity of the judgment-scale to the group of values presented. Such reluctance is probably more likely to occur when the task is that of judging meaningful objects or situations



along a value-dimension than when the task of judgment concerns objects that are emotionally neutral for the subject.

The observations made in reporting the experiment on the judgment of occupations concerning the manner in which the task of absolute judgment was carried out apply here as well. The same importance of the end-stimuli in anchoring the scale of judgment was reported by the subjects, as was the attempt, and frequent failure, on their part to keep the categories equal in width. The intra-serial effects noted in the earlier experiment occurred in these judgments too.

The verbal descriptions of forms of behavior which constituted the items for judgment were much more subject to several interpretations than were the names of occupations employed in the first experiment. Whereas shifts in the meaning of an occupation were reported only rarely, there were rather frequent reports in the present experiment that an item seemed worse than before (or not so bad) because it was now seen in a different context. Thus "violating the dim-out by failing to pull down your shades" might be seen on one occasion as mere censurable carelessness, and later seen as constituting a serious threat to men's lives. The example given is rather extreme; most of the shifts in meaning were minor in comparison. However, as a consequence of such changes in meaning, a few items shifted considerably upward or downward in the scale of judgment when they appeared on a second occasion as members of a new series. Another consequence of the fact that different interpretations were possible was that stabilization of the scale of judgment took place less early in the session than had been the case in the judgment of occupations.

Several of the subjects reported some difficulty in judging the particular behavior described in certain items as distinguished from passing a judgment on the person who would perform such an act. Thus one subject declared that "pocketing the tip which the previous customer left for the waitress" implied that one would commit the most heinous crimes. This difficulty was, however, largely overcome during the performance of the graphic rating task, and, in any case, the experimenter tried to avoid the use of items in the main experiment that the subject had found troublesome during the graphic rating.

The data relevant to the problem of determining the changes that occur in the properties of the absolute scale as a function of the remoteness of the anchoring value have been treated in the same

TABLE VI  
THE MEAN OF THE STIMULUS-VALUES TO WHICH THE SIX ABSOLUTE  
CATEGORIES ARE ASSIGNED

Category	Without Anchor	Distance of Anchoring Value (in mm.)							
		10	20	30	40	50	60	65	
Subject A (Stimulus-range 70-100; anchor below)									
1	72.6								
2	74.7	72.5	72.5						
3	77.2	73.0	72.5	72.5	72.5	72.5	72.5		
4	83.4	77.2	75.2	72.5	73.0	72.5	72.5	72.5	
5	90.9	84.8	84.8	84.3	80.3	79.6	80.0	79.9	
6	96.8	94.3	93.8	93.5	92.0	92.5	92.5	92.3	
		10	20	30	35	40	50	60	65
Subject B (Stimulus-range 0-30; anchor above)									
1	3.5	4.3	4.2	4.8	6.3	5.6	8.1	8.1	13.9
2	10.5	13.3	14.8	16.0	16.8	19.1	21.7	21.7	27.5
3	16.5	19.2	22.5	23.9	24.8	27.1	27.5	27.5	
4	22.0	24.9	26.7	27.5	27.5				
5	25.4	27.5	27.5						
6	27.5								
		10	15	20	30	40	50	55	
Subject C (Stimulus-range 5-35; anchor above)									
1	7.6	7.5	8.1	8.2	8.2	15.2	19.0	20.0	
2	12.1	12.5	12.8	15.7	16.6	29.6	32.5		
3	19.1	19.6	22.3	24.8	26.5				
4	24.2	26.5	31.0	32.0	32.5				
5	29.0	32.5							
6	32.5								
		15	20	30	40	50	55	65	68
Subject D (Stimulus-range 0-30; anchor above)									
1	5.1	5.5	5.1	5.0	6.6	5.2	8.8	9.0	10.0
2	12.1	14.1	13.5	15.6	15.5	14.7	20.2	20.6	22.0
3	18.3	19.9	18.7	22.7	22.8	23.5	27.2	27.2	27.0
4	22.5	23.8	24.9	23.4	26.7	26.1	27.5	27.5	27.5
5	26.6	27.5	27.5	27.5					
6	27.5	27.5							
		10	20	30	40	50	60	65	70
Subject E (Stimulus-range 0-30; anchor above)									
1	2.7	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
2	7.2	7.5	8.5	8.8	8.0	10.7	11.6	11.5	12.7
3	11.7	11.3	13.8	13.3	17.3	15.2	17.2	20.3	22.1
4	17.5	19.7	19.5	21.6	21.8	24.8	24.6	25.7	27.5
5	23.2	22.7	26.5	24.6	27.5	27.5	27.5		
6	26.6	27.5	27.5						

TABLE VI—(Continued)

Cate- gory	With- out Anchor	Distance of Anchoring Value (in mm.)							
		5	10	20	30	35	40	45	50
Subject F (Stimulus-range 50-80; anchor below)									
1	53.0	53.7	55.9	52.5	53.8	52.5	57.8	54.4	52.5
2	55.7	54.6	61.3	52.5	56.4	57.8	64.4	61.6	57.5
3	62.2	65.0	70.8	58.4	57.3	59.4	71.5	64.4	61.1
4	67.9	60.0	68.1	63.3	65.4	70.4	74.7	69.7	66.7
5	73.0	73.1	74.4	71.5	72.5	74.6	77.5	74.2	70.5
6	76.3	74.4	76.7	77.0	77.5	77.5	77.5	77.5	76.3

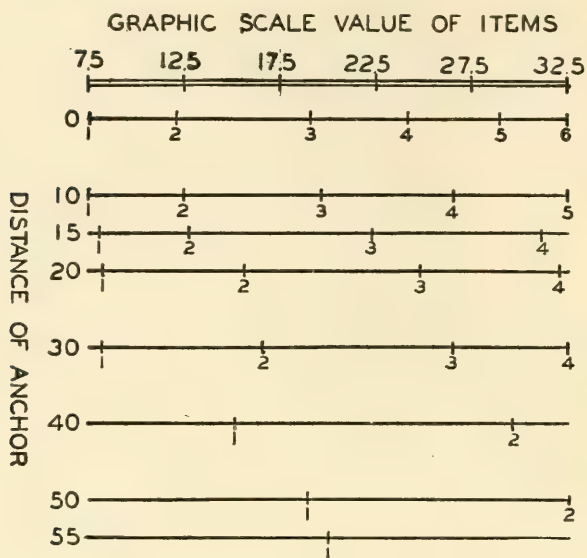
ways as the data obtained in the experiment on judgments of the prestige of occupations.

The first mode of treatment is that of determining the mean stimulus-value evoking each response-category of the scale in the sessions in which anchoring values were introduced to define category Six or category One. These means, together with the means of the stimulus-values evoking the various categories in the sessions without anchoring, are presented in Table VI. For each subject, the range of values provided by the stimulus-items is indicated.

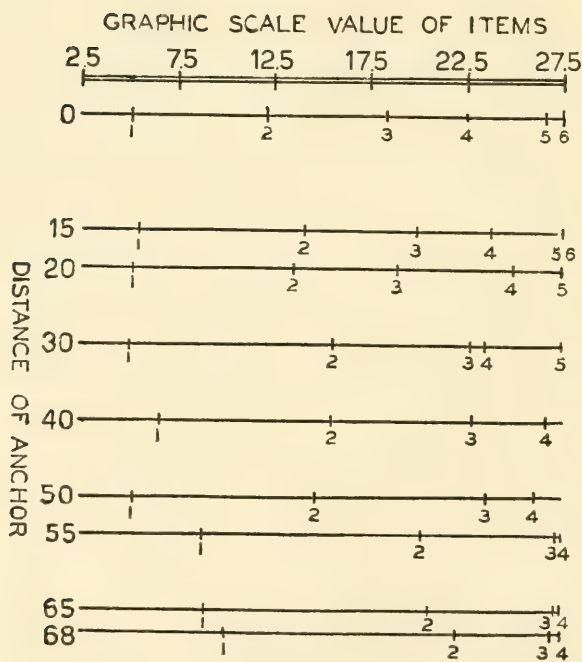
For five of the six subjects who served in the experiment, changes occur in the means of the stimulus-values as the anchoring value recedes from the stimulus-range. These changes are such that an extension of the scale of judgment in the direction of the anchoring value is indicated. In the case of subject F, however, the usual anchoring effect is absent. All six categories are used even in the session in which the anchoring value is 50 mm. below the range; while there are changes in the means of the stimulus-values assigned to a given category, these changes exhibit no regularity.

The explanation for the failure of the anchoring effect in subject F's judgments lies in his interpretation of the task of judgment when anchoring values were provided. According to his report, each item has two aspects, a "general badness factor" and a "specific factor, depending on the nature of the particular moral outrage, whether it is a violation of the public trust or an action that is damaging to the person or character of another individual, *etc.*" The effect of the introduction of an anchoring item was that of "defining the scale in which you judge." If the anchoring item were one which defined the scale for him in terms of the effect of the action on society, items in the stimulus-series that seemed to represent the same type of action were displaced toward the anchor.





O:C



O:D

Some items, however, though "they should of logical necessity be moved to One" resisted the shift because they possessed a high degree of the "general badness factor." As a consequence of subject F's attitude toward the task, his judgments in the sessions with anchoring are rearrangements of the stimulus-series as compared to the unanchored session but exhibit no evidence of the anchoring effect as such. As the subject pointed out, "it doesn't make much difference where on the scale the anchor is, how distant it is; it seems to have always the same effect of defining the nature of the scale in which you judge."

From the changes in the means of the stimulus-values assigned to the various judgment-categories by the other subjects, it may be inferred that the characteristic extension of the scale occurs when an anchoring value is introduced, and also that the degree of such extension bears a relation to the distance of the anchoring value from the range provided by the stimulus-items. As the anchoring value for category Six recedes, the means of the stimulus-values rise (subjects B, C, D, and E). If category One is anchored (subject A), the means of the stimulus-values fall as the anchoring value recedes. Fewer categories are used by the subject as the anchoring value becomes more distant, and category-width increases. Figures 8 and 9 demonstrate these relations graphically for subjects C and D. Inversions in the tendency for the mean of the stimulus-values to rise, or fall, as the anchoring value recedes are found in the data, particularly in those of subjects D and E. These inversions are largely a consequence of rise or fall in the judgment of certain items as a result of a change in interpretation.

The data of the present experiment provide further evidence concerning the question of the form of the relation between the position and width of the absolute scale and the distance of the anchoring value. In the case of subject C, there is a fairly regular relation up to the anchoring value that is 30 mm. distant; between the anchoring values 30 mm. and 40 mm., a sudden extension of the

---

FIGS. 8 and 9. Mean stimulus-value assigned to each category (1, 2, 3, 4, 5, 6) of the absolute scale of the undesirability of forms of behavior. These figures show the relation of the various categories of the absolute scale to the values of the stimulus-items marked off on the abscissa at the top of the figure. An absolute scale has been constructed for the sessions without anchoring and for the sessions with each value of the anchor. The mean of those stimulus-values (graphic scale-values) that evoked each of the categories has been marked off on the scale and labelled with the appropriate category-number. Taking the scale corresponding to the sessions without anchoring as zero, the scales corresponding to the various anchoring values have been spaced according to the distance of the anchors from the top of the range of values provided by the stimulus-series. The data are from Table VI, Subjects C and D.

TABLE VII

ABSOLUTE JUDGMENTS MADE IN THE SESSIONS WITHOUT AND WITH ANCHORING:  
THE MEAN OF THE CATEGORY-NUMBERS ASSIGNED TO ITEMS FROM  
THE SIX INTERVALS

Stimulus- Value of Items	Distance of Anchoring Value (in mm.)						
	10	20	30	40	50	60	65
<i>Subject A: Sessions without Anchor</i>							
72.5	1.85	1.90	1.75	1.65	1.95	1.65	2.00
77.5	2.85	3.40	3.00	3.00	3.00	2.95	2.65
82.5	3.85	4.00	4.05	3.35	4.10	4.00	4.30
87.5	4.10	4.70	5.00	4.00	5.00	4.90	5.00
92.5	4.75	5.00	5.45	4.95	5.00	5.10	5.00
97.5	5.70	5.50	5.50	6.00	5.50	5.60	5.50
<i>Subject A: Sessions with Anchor</i>							
72.5	3.00	3.30	3.55	3.95	4.00	3.95	4.00
77.5	4.40	4.40	4.50	5.00	5.00	5.00	5.00
82.5	4.95	5.00	5.00	5.00	5.00	5.00	5.05
87.5	5.30	5.50	5.50	6.00	6.00	6.00	6.00
92.5	5.50	5.50	5.50	6.00	6.00	6.00	6.00
97.5	6.00	6.00	6.00	6.00	6.00	6.00	6.00
<i>Subject B: Sessions without Anchor</i>							
2.5	1.00	1.10	1.00	1.00	1.00	1.35	1.05
7.5	2.00	2.05	1.15	2.15	2.20	1.80	1.25
12.5	2.70	2.90	2.00	2.40	2.75	2.00	2.75
17.5	2.95	3.00	2.40	3.30	2.90	2.40	3.25
22.5	4.45	3.75	4.25	4.20	3.85	3.60	4.25
27.5	5.50	5.15	5.25	5.55	5.20	5.40	5.35
<i>Subject B: Sessions with Anchor</i>							
2.5	1.00	1.05	1.00	1.00	1.00	1.00	1.00
7.5	1.45	1.50	1.15	1.00	1.00	1.00	1.00
12.5	2.20	2.00	2.00	1.80	1.80	1.00	1.00
17.5	2.35	2.00	2.00	2.00	2.00	1.90	1.90
22.5	3.45	2.65	2.50	2.40	2.05	1.95	1.95
27.5	4.45	4.20	3.80	3.50	2.55	2.50	2.50
<i>Subject C: Sessions without Anchor</i>							
7.5	1.00	1.50	1.50	1.00	1.40	1.50	1.70
12.5	2.00	2.30	2.10	2.15	2.05	2.00	2.05
17.5	3.00	2.95	3.05	2.90	2.85	3.50	2.60
22.5	3.40	3.25	3.50	3.60	3.35	3.00	3.60
27.5	4.45	4.35	4.45	4.80	4.75	4.30	4.45
32.5	5.90	5.90	5.40	5.85	5.60	5.50	5.35
<i>Subject C: Sessions with Anchor</i>							
7.5	1.00	1.30	1.00	1.00	1.00	1.00	1.00
12.5	2.00	1.90	1.85	1.85	1.00	1.00	1.00
17.5	3.00	2.80	2.60	2.20	1.05	1.00	1.00
22.5	3.25	2.95	2.80	2.55	1.05	1.00	1.00
27.5	4.00	3.30	3.00	3.00	1.90	1.00	1.00
32.5	5.00	4.00	3.50	3.50	2.00	1.45	1.00



TABLE VII—(Cont.)

<i>Stimulus- Value of Items</i>	<i>Distance of Anchoring Value (in mm.)</i>							
	<i>15</i>	<i>20</i>	<i>30</i>	<i>40</i>	<i>50</i>	<i>55</i>	<i>65</i>	<i>68</i>
<i>Subject D: Sessions without Anchor</i>								
2.5	1.00	1.00	1.30	1.00	1.00	1.00	1.00	1.00
7.5	1.60	1.45	1.20	1.00	1.25	1.25	1.00	1.30
12.5	2.05	2.15	2.20	1.90	2.00	1.65	1.95	1.85
17.5	3.00	2.95	2.95	2.90	3.00	2.75	3.10	2.65
22.5	3.40	3.85	4.30	3.95	3.70	3.45	4.00	3.55
27.5	5.45	5.40	4.85	5.50	5.25	5.35	5.35	5.40
<i>Subject D: Sessions with Anchor</i>								
2.5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
7.5	1.00	1.15	1.00	1.00	1.00	1.00	1.00	1.00
12.5	1.95	2.10	2.00	1.75	1.95	1.10	1.00	1.00
17.5	2.45	2.50	2.45	2.30	2.25	1.50	1.55	1.50
22.5	3.15	3.40	3.15	3.10	3.15	2.05	2.00	2.05
27.5	4.95	4.50	3.90	3.50	3.40	3.10	3.10	3.05
	<i>10</i>	<i>20</i>	<i>30</i>	<i>40</i>	<i>50</i>	<i>60</i>	<i>65</i>	<i>70</i>
<i>Subject E: Sessions without Anchor</i>								
2.5	1.10	1.00	1.45	1.05	1.50	1.00	1.00	1.30
7.5	2.40	2.20	2.85	2.60	2.40	2.40	2.40	2.60
12.5	3.00	3.20	3.40	3.90	3.05	2.95	2.55	2.85
17.5	4.60	4.00	4.00	4.20	3.80	3.40	4.15	3.30
22.5	4.80	5.35	4.90	5.30	4.80	5.25	4.50	4.50
27.5	5.70	5.65	5.90	5.60	5.75	5.80	5.30	5.50
<i>Subject E: Sessions with Anchor</i>								
2.5	1.00	1.00	1.45	1.00	1.00	1.00	1.00	1.00
7.5	2.40	2.45	2.00	2.00	2.40	2.05	2.00	2.00
12.5	3.00	3.00	3.10	3.00	2.50	2.10	2.10	2.20
17.5	4.40	3.20	3.45	3.30	2.85	2.50	2.50	2.30
22.5	4.60	4.20	3.95	3.60	3.65	3.85	3.50	3.00
27.5	5.50	5.20	5.00	4.65	4.45	4.35	3.85	3.45
	<i>5</i>	<i>10</i>	<i>20</i>	<i>30</i>	<i>35</i>	<i>40</i>	<i>45</i>	<i>50</i>
<i>Subject F: Sessions without Anchor</i>								
52.5	1.55	1.40	1.50	2.15	1.80	1.55	1.40	1.25
57.5	3.25	2.50	2.30	1.85	2.45	2.90	2.50	2.10
62.5	3.30	2.95	2.95	3.35	2.90	3.00	3.50	3.15
67.5	3.80	3.70	3.95	4.35	3.80	3.30	3.40	4.55
72.5	5.40	4.65	4.80	4.75	4.70	4.30	4.70	5.20
77.5	5.55	4.80	5.60	5.45	5.30	5.35	5.70	6.00
<i>Subject F: Sessions with Anchor</i>								
52.5	1.50	1.00	1.95	2.20	1.90	1.10	1.00	1.00
57.5	2.85	1.60	3.40	2.10	2.55	1.15	1.40	2.25
62.5	3.50	1.65	4.00	3.50	2.95	2.05	2.85	3.60
67.5	4.00	3.35	3.70	4.50	4.05	1.90	3.25	4.55
72.5	5.50	4.00	5.10	4.95	4.35	2.65	4.40	5.05
77.5	5.30	4.20	6.00	5.50	4.65	4.35	5.75	6.00

scale takes place. After the break, the scale continues to extend; and at the anchoring value that is 55 mm. distant from the range, all the stimulus-items are assigned to category One. The data of

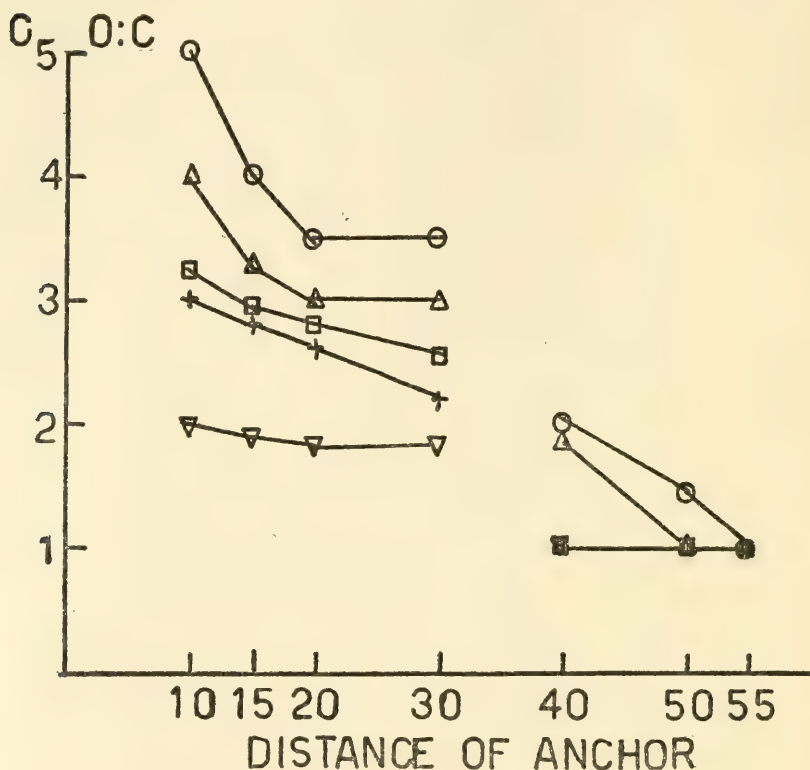


FIG. 10. Mean category-number (C) assigned to each stimulus-value in judging the undesirability of forms of behavior. This figure shows the influence of the various anchoring values upon the category-numbers assigned to items of the several stimulus-values. The points plotted in the figure represent the mean of the category-numbers assigned to each of the stimulus-values in each of the sessions with anchoring. The abscissa values indicate the remoteness of the various anchors from the upper end of the stimulus-range. The various stimulus-values of the items, the other parameter, are represented as follows:

- 32.5
- △ 27.5
- 22.5
- + 17.5
- ▽ 12.5

Items whose stimulus-value was 7.5 are omitted from the figure for purposes of clarity. The data are those of subject C from Table VII.

subject D also suggest a break in the function; a sudden extension of the scale takes place between the anchoring values 50 mm. and

55 mm. distant from the range, and thereafter the scale remains extended but exhibits no further change. Subject B's judgments show a regular increase in the width of the absolute scale, as inferred from the mean stimulus-values assigned to the several categories,

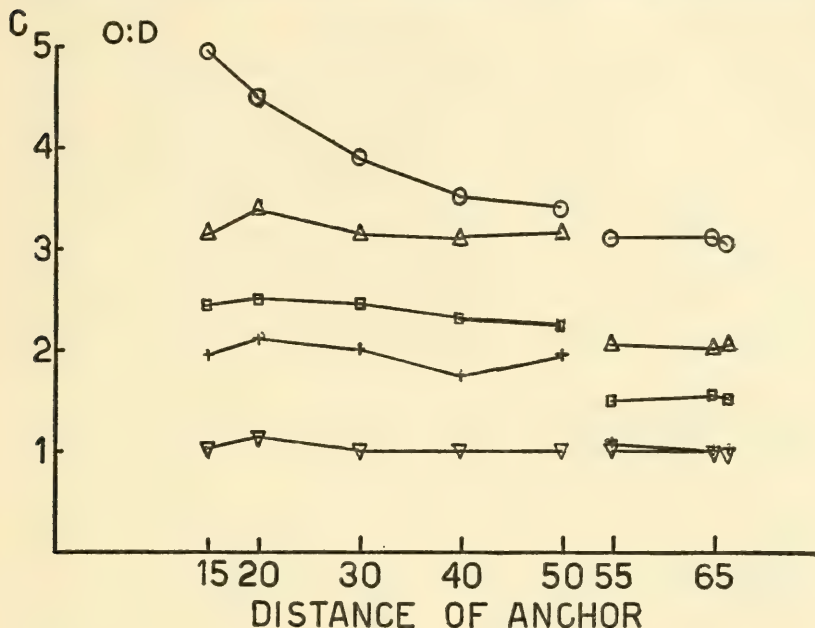


FIG. 11. Mean category-number (C) assigned to each stimulus-value in judging the undesirability of forms of behavior. This figure shows the influence of the various anchoring values upon the category-numbers assigned to items of the several stimulus-values. The points plotted in the figures represent the mean of the category-numbers assigned to each of the stimulus-values in each of the sessions with anchoring. The abscissa values indicate the remoteness of the various anchors from the upper end of the stimulus-range. The various stimulus-values of the items, the other parameter, are represented as follows:

- 27.5
- △ 22.5
- 17.5
- ⊕ 12.5
- ▽ 7.5

Items whose stimulus-value was 2.5 are omitted from the figure for purposes of clarity. The data are those of subject D from Table VII.

but indicate that a sudden extension of the scale occurs between anchoring values 60 mm. and 65 mm. distant from the range.

For both subject A and subject E, the data point to an increase in the extension of the absolute scale as the anchoring value becomes more remote, but in neither case is there an indication of a discontinuity in the function.



Subject A's scale has apparently reached its limit of extension at the anchoring value that is 40 mm. from the range and thereafter it undergoes no further change. It is suspected that in the case of subject A, who, it will be recalled, found it difficult to use the lower

TABLE VIII

ABSOLUTE JUDGMENTS MADE IN SESSIONS WITHOUT AND WITH ANCHORING:  
THE MEAN OF ALL THE CATEGORY-NUMBERS ASSIGNED TO THE  
SERIES OF ITEMS IN EACH EXPERIMENTAL SESSION

Sessions	Distance of Anchoring Value (in mm.)						
	10	20	30	40	50	60	65
<i>Subject A (Anchors below range)</i>							
Without anchor ...	3.85	4.08	4.13	3.83	4.09	4.03	4.07
With anchor .....	4.86	4.95	5.01	5.33	5.33	5.33	5.34
<i>Subject B (Anchors above range)</i>							
	10	20	30	35	40	50	60
Without anchor ...	3.10	2.99	2.68	3.10	2.98	2.76	2.98
With anchor .....	2.48	2.23	2.08	1.95	1.73	1.56	1.56
<i>Subject C (Anchors above range)</i>							
	10	15	20	30	40	50	55
Without anchor ...	3.29	3.38	3.33	3.38	3.33	3.30	3.29
With anchor .....	3.04	2.71	2.46	2.35	1.33	1.08	1.00
<i>Subject D (Anchors above range)</i>							
	15	20	30	40	50	55	65
Without anchor ...	2.75	2.80	2.80	2.71	2.70	2.58	2.73
With anchor .....	2.42	2.44	2.25	2.11	2.12	1.63	1.61
<i>Subject E (Anchors above range)</i>							
	10	20	30	40	50	60	65
Without anchor ...	3.60	3.57	3.75	3.78	3.55	3.47	3.32
With anchor .....	3.48	3.18	3.16	2.93	2.81	2.64	2.49
<i>Subject F (Anchors below range)</i>							
	5	10	20	30	35	40	45
Without anchor ...	3.81	3.33	3.52	3.65	3.49	3.40	3.37
With anchor .....	3.76	2.63	4.02	3.79	3.41	2.20	3.11
	50						
Without anchor ...	3.71						
With anchor .....	3.74						

response-categories, the introduction of a low anchor simply permitted her to drop them and use only the number of categories that seemed natural to her in judging the provided range of stimulus-items. She reported frequently, "Having an anchor helps; three or four categories is about what they belong in."

Subject E's judgments indicate that a regular relation obtains between the distance of the anchoring value and the extension of the scale, but the degree of extension is relatively slight in her case and it would appear that the limits of extension of the scale had not been reached even when the anchoring value was 70 mm. distant from the stimulus-range.

Treatment of the data in terms of the mean category-numbers assigned to the several stimulus-values in each of the sessions with anchoring bears out the conclusions already drawn. Table VII presents these mean category numbers for each experimental session for each of the subjects. The table is to be read in the same fashion as Table III (see p. 46). Figures 10 and 11 show the manner in which the mean category-number assigned to the several stimulus-values changes as a function of the distance of the anchoring value for subjects C and D. These figures serve to bring out particularly clearly the "levelling" effect of the anchor, *i.e.*, the more distant the anchoring value, the less differentiation the subject makes between the various stimulus-values. In the case of subject C, this effect is particularly striking, since all the items are called One when the distance of the anchoring value is 55 mm. In the case of subject D, this effect is less apparent.

Table VIII presents the mean of all the category-numbers assigned to the entire series of stimulus-items in each of the sessions with anchoring and the companion sessions without anchoring. In Figures 12-16, the mean of the category-numbers assigned to the entire series in a given session is plotted as a function of the remoteness of the anchoring value. Again, this treatment of the data bears out the several interpretations offered in connection with the treatment in terms of the mean stimulus-values assigned to the several categories. Increasing the distance of the anchoring value is seen to increase the extension of the scale of judgment, and a break in the function is apparent in the figures for subjects B, C, and D.

The introspective reports of the subjects shed little light on the nature of the change that occurs at the point at which a discontinuity in the function appears. It may be inferred from the data that here, as in the experiment on the judgment of occupations, the bottom anchoring agent suffered a loss at the point at which the break in the function occurs. This interpretation is borne out by the introspections of subject B on the matter of category One. The report occurred when the distance of the anchoring value from the stimulus-range was 60 mm. "The broadening of categories is

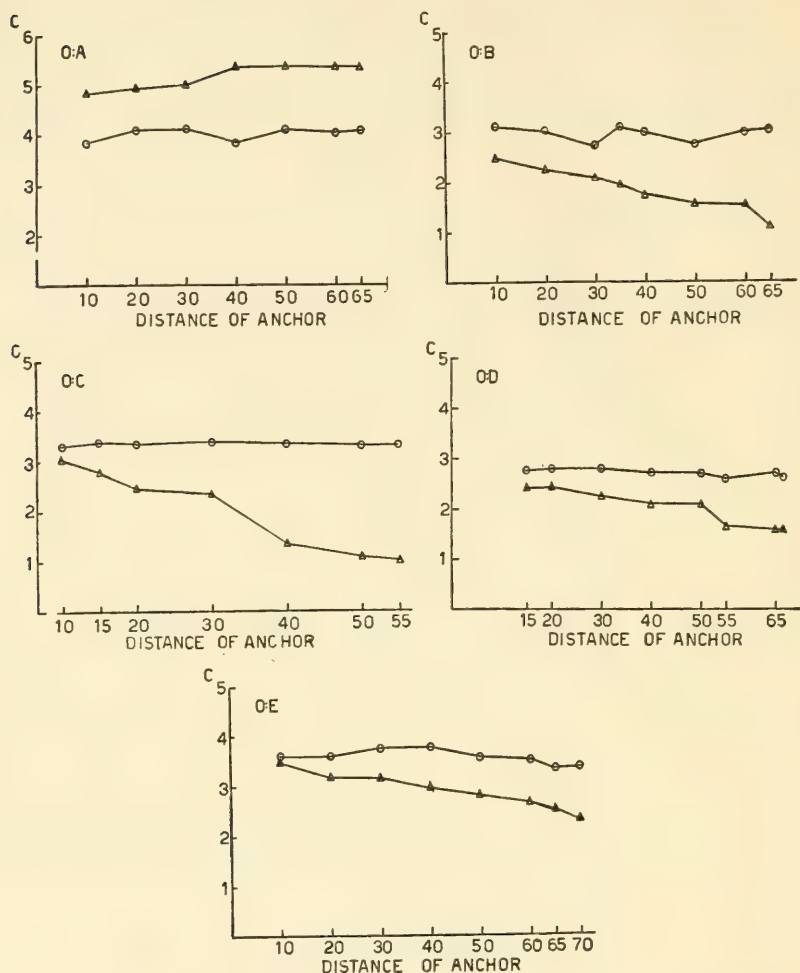


FIG. 12, 13, 14, 15, and 16. Mean category-number (C) assigned to the entire series of stimulus-items in judging the undesirability of forms of behavior. These figures are intended to show the location of the stimulus-range with respect to the subject's absolute scale as a function of the remoteness of the anchoring values used in the various experimental sessions. Each of the plotted points represents the mean of all the category-numbers assigned to the entire series of stimulus-items during an experimental session. The different anchoring values are arranged on the abscissa and the mean category assignment on the ordinate. Together with each of the means for sessions with an anchor (triangles) is plotted the mean for the same series of stimulus-items without anchoring (circles); the difference, then, between the circles and the triangles for a given anchoring value may be taken as an indicator of the influence of that anchoring value. The data are from Table VIII.



almost in order of their distance from the end. Six is awfully broad, and then Five, and Four. But category One is hitched down here. If you try to broaden it, you can't do it at the low end of One, and if you broaden it at the top end, then Two and Three aren't broad enough that way, and things would have to shift up. There just aren't enough categories."

## CHAPTER V

### GENERAL DISCUSSION OF THE FINDINGS OF THE STUDY

In this chapter, an attempt will be made to bring together the findings of the two experiments on the absolute judgment of verbal materials along value-dimensions. Figures 17 and 18 show the manner in which the mean of the category-numbers assigned to the several stimulus-values presented for judgment varies as a function of the stimulus-value of the item and as a function of the distance of the anchoring value. These figures present in compact form the major findings of the two experiments described in the preceding chapters. The data plotted are those of subject B in Experiment I (Figure 17) and of subject C in Experiment II (Figure 18). It will be recalled that for both subjects, category Six of the judgment-scale was anchored by the introduction of items whose stimulus-values were above the range provided by the stimulus-items.

If we define the prestige-value of the items as the average category-number assigned, it appears that the following statements may be made concerning the summary tridimensional plot in Figure 17. It will be observed that in this figure there are two intersecting systems of planes. One set is made up of planes that are parallel to the stimulus-scale (receding toward the "northwest" in the diagram); these planes intersect the scale representing the distance of the anchor at those points which correspond to the various anchoring distances. These planes may therefore be specified in terms of the anchoring values to which they refer. The areas of these planes are proportional to the total prestige assigned to all the items combined. That is, the greatest prestige-assignment that could be made under the conditions of the experiment would consist in the assignment of an average category-number of Six to each of the stimulus-items, regardless of their stimulus-value. This would be represented on the figure by one of these anchor planes having the maximum possible area, or the area determined by the distance chosen to represent a given unit of stimulus-value and the distance chosen to represent a single category,—in other words, the choice of modulus. The presence in the figure of a plane having this maximum area would imply that the total range of stimulus-values provided by the items in the series fell within, or somewhat above, category Six of the subject's absolute scale, *i.e.*, that all the items

were called Six. If, on the other hand, the total range of stimulus-values fell within category One of the subject's absolute scale, so that all the stimulus-items were called One, the areas of these planes would all be reduced to a certain minimum area, determined again

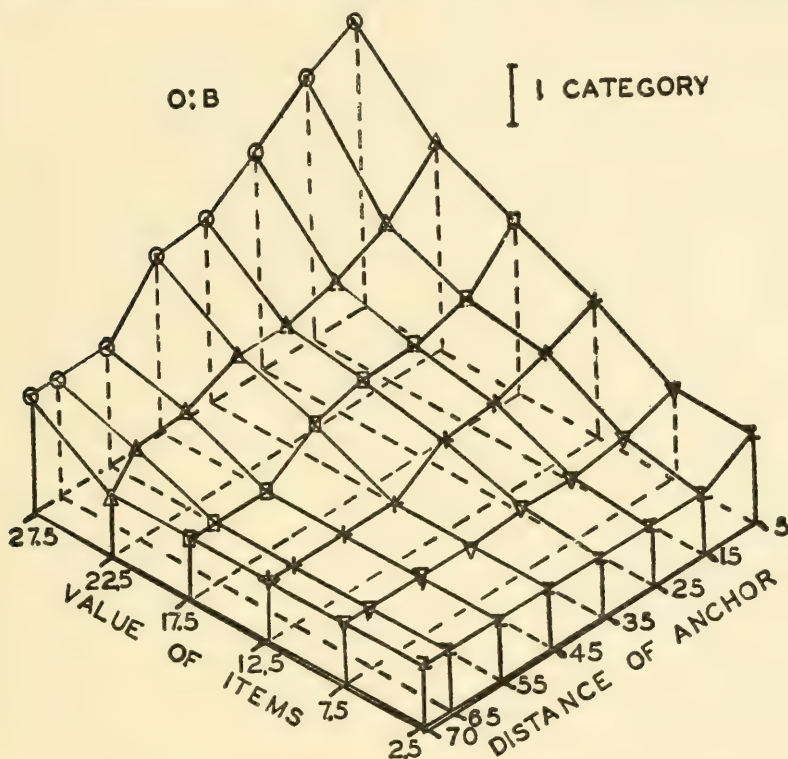


FIG. 17. This figure shows mean category-assignment as a function of stimulus-value and as a function of the distance of the anchoring value, the two independent variables used in this experiment. The data are those of subject B in Experiment I (see Table III and Figure 3). The various values of the stimulus-items are represented as follows:

- 27.5
- △ 22.5
- 17.5
- + 12.5
- ▽ 7.5
- z 2.5

It will be noted that the mean category assigned to items whose stimulus-values were 2.5 are plotted in the figure, whereas they were omitted from Figure 3.

by the choice of modulus. The data obtained represent some intermediate effect between these two extremes. It will be observed, however, that the areas of these planes decrease as the anchoring value becomes more and more remote from the top end of the range



of values provided by the stimulus-items. The fact that this occurs means that the total prestige of the items in the stimulus-series becomes less, or is depressed, as the anchoring values become more distant from the top of the stimulus-range. In an attempt to dis-

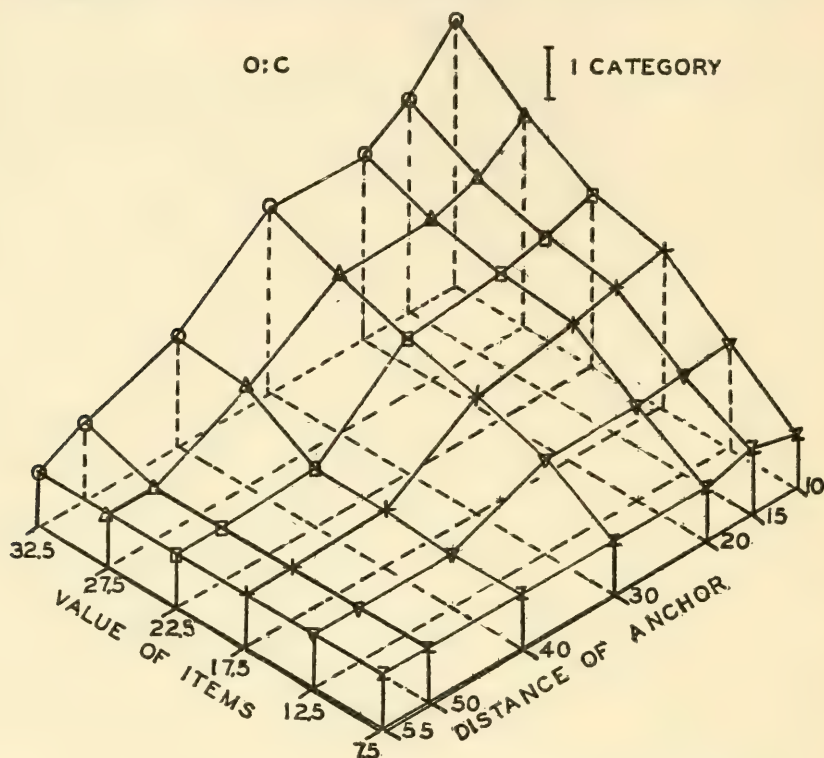


FIG. 18. This figure shows mean category-assignment as a function of stimulus-value and as a function of the distance of the anchoring value, the two independent variables used in this experiment. The data are those of subject C in Experiment II (see Table VII and Figure 10). The various values of the stimulus-items are represented as follows:

- 32.5
- △ 27.5
- 22.5
- + 17.5
- ▽ 12.5
- z 7.5

It will be noted that the mean category assigned to items whose stimulus-values were 7.5 are plotted in this figure, whereas these were omitted from Figure 10.

cover to what extent each of the stimulus-items contributes to the total prestige of a given series, each of these planes can be broken up into smaller sections corresponding to the various stimulus-intervals, as has been done in the figure for the planes corresponding to

the anchoring distances of 5 and of 70 mm. Such contribution, of course, would be proportional to the area of the smaller sections. It is evident that the anchoring value has a differential effect on the proportional contribution of the several stimulus-values to the total prestige of the series. As the anchor becomes more and more distant from the range of values provided by the stimulus-series, those stimulus-items that are nearest the anchor, *i.e.*, at the high end of the range of stimulus-values, contribute proportionally less and less to the total prestige of the series.

From this analysis, it may be inferred that the absolute scale has been extended in the direction of the anchoring value, so that the range of stimulus-values overlaps less and less with the subject's absolute scale as category Six of the absolute scale is located, by the introduction of anchoring values, farther and farther away from the top of the range of values provided by the stimulus-items.

We may turn now to the planes that are parallel to the anchor scale and that recede toward the "northeast" in the diagram. These planes intersect the stimulus-scale at the various points to which they refer, and it may be seen that the areas of these planes are proportional to the prestige commanded by the items of the various stimulus-values. It will be immediately noted that the areas increase from the lower to the higher stimulus-values, a phenomenon analogous to the "stimulus-anchoring" which has already been remarked. These larger planes can be divided into a number of smaller sections corresponding to the distances of the anchoring values. This has been done in the figure for the planes corresponding to stimulus-values 2.5 and 27.5. These smaller sections will be seen to decrease in area as they progress, for any given stimulus-value, from the less remote to the more remote anchoring values. This fact provides another indication that the operation of anchoring category Six by a value above the top of the stimulus-range results in a decrease in the prestige assigned to the stimulus-items. Furthermore, it will be noted that the differences in the areas of the smaller sections corresponding to the various stimulus-intervals become less and less pronounced as the anchoring value becomes more and more remote. This levelling effect of the anchoring value has been remarked earlier. It seems quite clear that the distortion in the absolute scale brought about by a distant anchoring value includes both a displacement of the absolute scale either above or below the position which it has when it is merely "stimulus-anchored" and also produces a widening of the categories. In other

words, the absolute scale extends upward or downward in the direction of the anchoring value.

Finally, the upper surface of the figure may be interpreted as showing that the prestige assigned to an item, as indicated by the mean category-number, is a function of both the stimulus-value of that item and the anchoring value to which it is referred in the process of judgment. The marked depression around the upper values indicates that the anchoring values have a tendency to push all assigned category-numbers down to One regardless of the stimulus-value of the items. Since even in the unanchored situation the lower stimulus-values receive a mean category-assignment that approximates the minimum permitted by the instructions to judge in six categories, the influence exerted on them cannot be determined. Since One is the terminal category, it includes every subjective value that is less than Two, regardless of how *much* less than Two the subjective value may be,—*i.e.*, in terms of the absolute scale, category One becomes very wide, but its width cannot be determined.

With appropriate modifications to provide for the extension of the absolute scale downward if the anchoring value lies below the range of values provided by the stimulus-series, the above description of the changes in the absolute scale consequent upon the introduction of anchoring values that are more and more distant from the range applies with equal force to the principal findings of both of the experiments reported in this study. The tri-dimensional plots of the data bring out, also, the discontinuity in the functional relation between the position and width of the scale of judgment and the distance of the anchoring value. The break in the function between anchoring values 45 mm. and 55 mm. distant from the stimulus-range employed for subject B is evident in Figure 17; in the case of subject C, the break between anchoring values that are 30 mm. and 40 mm. above the stimulus-range is discernible in Figure 18.

On the basis of the findings obtained in the two experiments, it is evident that absolute judgments of verbal materials along value-dimensions exhibit the same general features as absolute judgments of psychophysical materials. Not only was it found that an absolute scale was established that conformed to the independently determined "stimulus-values," but it also appeared that the functional relation that exists between the distance of the anchoring value and the position and width of the absolute scale is similar in form to that which has been demonstrated for judgments of visual



inclinations and lifted weights. On the basis of the data obtained, it could be inferred that the absolute scale extends in the direction of the anchoring value, and that the degree of such extension is related to the distance of the anchoring value. The absolute scale, however, may be said to have limits of extension, just as it has been shown to have limits of compression. Beyond these limits, the scale no longer extends in a regular fashion; in the present experiment, it either remained extended, exhibiting little further change, or the rate of extension as the anchoring value receded tended to be sharply increased.

There are differences in the judgment-process consequent upon the differences in the nature of the material, but, on the whole, it may be said that the present study has demonstrated the applicability to value-judgments of a principle originally derived from psychophysical judgments. Such demonstration lends weight to the hypothesis that this principle constitutes a general principle of judgment that would apply to any type of stimulus-material judged along any dimension.

The findings of the present experiment, in adding to the accumulating evidence that certain principles of judgment have general applicability, have a number of implications for the understanding of everyday evaluations of objects, persons, and situations. While it is obvious that such judgments are a function of a large number of variables of attitude, stimulation, and experience, it is nevertheless possible to suggest certain general features that judgments of value may, in common with other judgments, be expected to exhibit.

As has been pointed out, the results of the present experiments bear out the general proposition that a scale of judgment formed along any dimension tends to become stimulus-anchored, or to conform to the current level of stimulation. A member of an impoverished and isolated rural community will, *e.g.*, judge the adequacy or the desirability of an article of food or clothing in terms of a scale of judgment that is based on a highly restricted range of experiences and knowledge. Hence his specific judgments on particular objects will be vastly different from those of an individual of the urban middle class whose judgment-scale derives from a much wider range of experiences and is also located on a higher portion of the total potential range of values.

Since the scale of judgment tends to shift, and to expand and contract, with changes in the level of stimulation, we may suppose that a change in the conditions of living of either of these individuals will result in an upward or downward shift in the judg-



ment-scale. It is not to be supposed, however, that such a shift will necessarily be complete. It has been suggested (39) that scales formed along some dimensions shift less readily than others and it is known that past experiences of stimulation and judgment may serve as anchoring influences that tend to prevent the complete conformity of the scale of judgment to the new level. One may suppose, also, that scales of judgment formed along value-dimensions that are closely bound up with motives and attitudes having great importance for the individual are less susceptible to a shift downward in the level of stimulation than to a shift upward. The scale of judgment can be expected to resist shifting to conform to a new level of stimulation that represents a serious frustration of such motives.

Our findings have a direct bearing on the problem of changes in the judgment of social phenomena. As we have seen, if particular persons and phenomena are being judged in terms of a given judgment-scale, the introduction of a new anchoring influence may operate so as to change radically the evaluations of the persons and phenomena. Changes in the interpretation of an object of judgment change the specific judgment of an object, but changes in a *scale* of judgment brings about a whole set of related changes in the judgments of an entire class of phenomena. Thus the acceptance of a new anchoring influence, whether it stems from actual experience, or from vicarious experience through the opinions of others, through propaganda, *etc.*, may bring about an abrupt revision of the scale so that is no longer anchored only in terms of current stimulation but is in part determined by some value that lies outside the range of immediate experience. Furthermore, one need not suppose that the effect of a given event or experience is confined to changes in a single scale of judgment. When a given experience gives rise to judgments along a number of value-dimensions, it can be expected very often to exert an influence on several judgment-scales at the same time.

In a complex environment, there are innumerable available anchoring influences. Which of these available anchoring influences will be accepted and will play a rôle in determining the position and width of a scale of judgment will depend upon the knowledge and attitudes of the individual. Once an anchoring value comes into play, however, its effect on the scale of judgment will bear a demonstrably lawful relation to the distance of the anchoring value from the current level in terms of which the individual's scale is anchored.

## CHAPTER VI

### SUMMARY AND CONCLUSIONS

The purpose of the present study was that of determining the functional relation that obtains between the position and width of the absolute scale of judgment and the remoteness of an anchoring value when the objects of judgment are verbal materials and the dimensions of judgment are social value-dimensions. To this end, two experiments, identical in plan and procedure, were performed. In Experiment I, the objects for judgment were verbal statements of occupations and the dimension of judgment was that of the social prestige commanded by these occupations. In Experiment II, the items for judgment were verbal descriptions of forms of social behavior to be judged in terms of the subject's personal opinion of their undesirability.

The items employed in both experiments were selected on the basis of prior determination for each subject of the relative subjective magnitudes of a large number of items. The technique of determining these relative subjective magnitudes was a graphic rating procedure. For each subject who served in each of the experiments, there was selected a determinate range of subjective magnitudes, defined in terms of his graphic rating scale-value in millimeters, and items were chosen from this range to serve as members of the stimulus-series for absolute judgment. The selected range was always 30 mm. in width (out of the entire 101 mm. used in the graphic rating scale), and was divided into 6 intervals for the purpose of the selection of items. A series consisted of 2 items drawn from each of the 6 intervals, or 12 items in all. Several series of items, equivalent in the graphic scale-values or "stimulus-values" represented, were chosen for each subject for use with the several anchors called for in the plan of the experiments. In addition, items at graded distances from the range of values provided by the stimulus-items were chosen to serve as anchoring values.

The main experiment consisted of alternate sessions without the introduction of an anchoring value and sessions with an anchoring value. In the sessions without anchoring, the subject was asked to judge the series of items, presented visually one at a time, in terms of a scale of six categories. In the sessions with anchoring, the subject was given an item to define for him either category One or category Six on his scale depending on whether the subject was to have an anchor above or below the stimulus-range.

The results of the two experiments revealed the same general tendencies of judgment.

From the distribution of judgments rendered in the sessions without anchoring, it was evident that the absolute scale described in terms of the categories of response bore a regular and orderly relation to the stimulus-values of the items in the series; in other words, the absolute scale tended to be "stimulus-anchored." The distribution of judgments showed a striking resemblance to those of judgments of psychophysical materials.

The results of the sessions in which anchoring values were introduced were analyzed in terms of the means of the stimulus-values of the items assigned to each of the categories of response used by the subject in a given session, and also in terms of the mean of the category-numbers assigned to the several stimulus-values of the items. On the basis of both types of treatment of the data, it was inferred that the effect of the anchoring value was that of bringing about an extension of the absolute scale upward or downward in the direction of the anchoring value. The extension of the absolute scale involves not only a displacement of the scale with reference to the range of values represented by the stimulus-series, but also a widening of the categories of response,—a finding in complete agreement with the results obtained with psychophysical material.

In the results of six of the subjects, there was some indication of a discontinuity in the functional relation between the position and width of the absolute scale and the remoteness of the anchoring value. The extension of the absolute scale tended to be regular up to a certain degree of remoteness of the anchoring value, but at this point, which was at a different distance for the several subjects, a large extension of the scale occurred. As the anchoring value grew more remote beyond the point at which the break occurred, the scale either remained extended and exhibited little further change, or it underwent further extensions. In either case, the break in the function as the anchor became more remote appeared to occur concomitantly with a sudden rise in the location of the lower categories with respect to the range of stimulus-values presented for judgment, a finding which was interpreted to indicate a loss in the effectiveness of the bottom anchoring stimulus.

The relations found to obtain in the present experiment between the position and width of the absolute scale and the remoteness of the anchoring value are strikingly similar to those that have been demonstrated to hold for judgments of psychophysical materials.



This similarity is interpreted as offering additional evidence that certain fundamental processes and principles of judgment may be assumed to be independent of the type of stimulus-material and of the dimension in which the judgment is rendered.

## REFERENCES

1. Allport, G. W. *Personality: A psychological interpretation*. New York: Henry Holt, 1937.
2. Asch, S. E. Studies in the principles of judgments and attitudes: II. Determination of judgments by group and by ego standards. *J. Soc. Psychol.*, 1940, 12, 433-465.
3. Asch, S. E., Block, H., & Hertzman, M. Studies in the principles of judgments and attitudes: I. Two basic principles of judgment. *J. Psychol.*, 1938, 5, 219-251.
4. Beebe-Center, J. G. The law of affective equilibrium. *Amer. J. Psychol.*, 1929, 41, 54-69.
5. Beebe-Center, J. G. The psychology of pleasantness and unpleasantness. New York: Van Nostrand, 1932.
6. Beebe-Center, J. G. Pleasantness and unpleasantness. In Boring, E. G., Langfeld, H. S., & Weld, H. P. *Psychology*. New York: John Wiley, 1935.
7. Bressler, J. Judgment in absolute units as a psychophysical method. *Arch. Psychol.*, N.Y., 1933, No. 152.
8. Cantril, H. The psychology of social movements. New York: John Wiley, 1941.
9. Cartwright, D. Relation of decision-time to the categories of response. *Amer. J. Psychol.*, 1941, 54, 174-196.
10. Chapman, D. W. & Volkman, J. A social determinant of the level of aspiration. *J. Abnorm. (soc.) Psychol.*, 1939, 34, 225-238.
11. Cohen, N. E. The relativity of absolute judgments. *Amer. J. Psychol.*, 1937, 49, 93-100.
12. Coover, J. E. Experiments in psychical research at Leland Stanford University. Stanford Univ., 1917.
13. Fernberger, S. W. Instructions and the psychophysical limen. *Amer. J. Psychol.*, 1931, 43, 361-376.
14. Fernberger, S. W., Glass, E., Hoffman, I., & Willig, M. Judgment times of different psychophysical categories. *J. exper. Psychol.*, 1934, 17, 286-293.
15. Fernberger, S. W. & Irwin, F. W. Time relations for the different categories of judgment in the "absolute method" in psychophysics. *Amer. J. Psychol.*, 1932, 44, 505-525.
16. Gould, R. & Lewis, H. B. An experimental investigation of changes in the meaning of level of aspiration. *J. exper. Psychol.*, 1940, 27, 422-438.
17. Henmon, V. A. C. The time of perception as a measure of differences in sensations. *Arch. Phil., Psychol., & Sci. Methods*, 1906, No. 8.
18. Henmon, V. A. C. The relation of the time of a judgment to its accuracy. *Psychol. Rev.*, 1911, 18, 186-201.
19. Hollingworth, H. L. The inaccuracy of movement. *Arch. Psychol.*, N.Y., 1909, No. 13.
20. Hollingworth, H. L. Experimental studies in judgment. *Arch. Psychol.*, N.Y., 1913, No. 29.
21. Hunt, W. A. Anchoring effects in judgment. *Amer. J. Psychol.*, 1941, 54, 395-403.
22. Hunt, W. A. & Volkman, J. The anchoring of an affective scale. *Amer. J. Psychol.*, 1937, 49, 88-92.
23. Johnson, D. M. Confidence and speed in the two-category judgment. *Arch. Psychol.*, N.Y., 1939, No. 241.
24. Lewis, H. B. Studies in the principles of judgments and attitudes: IV. The operation of "prestige suggestion." *J. Soc. Psychol.*, 1941, 14, 229-256.



25. Long, L. A study of the effect of preceding stimuli upon the judgment of auditory intensities. *Arch. Psychol.*, N.Y., 1937, No. 209.
26. Kellogg, W. N. The time of judgment in psychometric measures. *Amer. J. Psychol.*, 1931, 43, 65-86.
27. Martin, L. J. & Müller, G. E. *Zur Analyse der Unterschiedsempfindlichkeit*. Leipzig, 1899.
28. Needham, J. G. The time-error in comparison judgments. *Psychol. Bull.*, 1934, 31, 229-243.
29. Rogers, S. The anchoring of absolute judgments. *Arch. Psychol.*, N.Y., 1941, No. 261.
30. Seward, G. H. Recognition-time as a measure of confidence. *Arch. Psychol.*, N.Y., 1928, No. 99.
31. Sherif, M. A study of some social factors in perception. *Arch. Psychol.*, N.Y., 1935, No. 187.
32. Tresselt, M. E. & Volkmann, J. The production of uniform opinion by non-social stimulation. *J. abnorm. (soc.) Psychol.*, 1942, 37, 234-243.
33. Truman, S. R. & Wever, E. G. The judgment of pitch as a function of the series. *Univ. Calif. Publ. Psychol.*, 1928, 3, No. 5, 215-223.
34. Volkmann, J. The method of single stimuli. *Amer. J. Psychol.*, 1932, 44, 808-809.
35. Volkmann, J. The relation of the time of judgment to the certainty of judgment. *Psychol. Bull.*, 1934, 31, 672-673. (Abstract.)
36. Volkmann, J. The anchoring of absolute scales. *Psychol. Bull.*, 1936, 33, 742-743. (Abstract.)
37. Volkmann, J. The natural number of categories in absolute judgment. *Psychol. Bull.*, 1937, 34, 543-544. (Abstract.)
38. Volkmann, J. The compression of an absolute scale. *Psychol. Bull.*, 1938, 35, 676. (Abstract.)
39. Volkmann, J. Lectures in the psychology of judgment. Columbia University, 1942. (Unpub.)
40. Volkmann, J., Hunt, W. A., & McGourty, M. Variability of judgment as a function of stimulus-density. *Amer. J. Psychol.*, 1940, 53, 277-284.
41. Wever, E. G. & Zener, K. E. The method of absolute judgments in psychophysics. *Psychol. Rev.*, 1928, 35, 466-493.
42. Woodworth, R. S. *Experimental psychology*. New York: Henry Holt, 1938.
43. Woodworth, R. S. & Thorndike, E. Judgments of magnitude by comparison with a mental standard. *Psychol. Rev.*, 1900, 7, 344-355.

## APPENDIX

### ITEMS FROM WHICH SELECTION WAS MADE FOR EXPERIMENT I

- |                                    |                                    |
|------------------------------------|------------------------------------|
| 1. seaman                          | 58. hairdresser                    |
| 2. junior high school teacher      | 59. tombstone designer             |
| 3. dentist                         | 60. auctioneer                     |
| 4. secret service man              | 61. manufacturer                   |
| 5. magazine editor                 | 62. salesgirl in the 5 & 10        |
| 6. bellhop                         | 63. poet                           |
| 7. traffic policeman               | 64. sandhog                        |
| 8. deep sea diver                  | 65. school superintendent          |
| 9. book reviewer                   | 66. bootblack                      |
| 10. realtor                        | 67. landscape gardener             |
| 11. veterinary surgeon             | 68. chorus girl                    |
| 12. trapper                        | 69. librarian                      |
| 13. pawnbroker                     | 70. interior decorator             |
| 14. mining engineer                | 71. watch repairer                 |
| 15. motion picture star            | 72. auto repairman                 |
| 16. traveling salesman             | 73. Episcopal clergyman            |
| 17. ditch digger                   | 74. waitress                       |
| 18. laundry worker                 | 75. electrician                    |
| 19. foreign correspondent          | 76. artist                         |
| 20. house painter                  | 77. window cleaner                 |
| 21. lawyer                         | 78. sharecropper                   |
| 22. pharmacist                     | 79. ship builder                   |
| 23. insurance salesman             | 80. drug store clerk               |
| 24. lumberjack                     | 81. wholesaler                     |
| 25. radio announcer                | 82. cigar maker                    |
| 26. draftsman                      | 83. fortune teller                 |
| 27. carpenter                      | 84. elevator operator              |
| 28. translator                     | 85. band leader                    |
| 29. vaudeville magician            | 86. personnel manager              |
| 30. army officer                   | 87. vocational guidance counselor  |
| 31. fashion designer               | 88. inventor                       |
| 32. cook                           | 89. circus clown                   |
| 33. filling station attendant      | 90. electrocutioner                |
| 34. judge                          | 91. charwoman                      |
| 35. newspaper reporter             | 92. truant officer                 |
| 36. plumber                        | 93. trained nurse                  |
| 37. YMCA secretary                 | 94. handwriting expert             |
| 38. railway switchman              | 95. advertising copywriter         |
| 39. snakecharmer                   | 96. chauffeur                      |
| 40. museum attendant               | 97. truck driver                   |
| 41. newsboy                        | 98. pulp writer                    |
| 42. rancher                        | 99. locomotive engineer.           |
| 43. junk-dealer                    | 100. prizefighter                  |
| 44. attendant in a mental hospital | 101. auditor                       |
| 45. mason                          | 102. dog breeder                   |
| 46. exterminator                   | 103. photographer                  |
| 47. cartographer                   | 104. detective                     |
| 48. bricklayer                     | 105. stenographer                  |
| 49. ticket taker in a theater      | 106. museum director               |
| 50. paper hanger                   | 107. florist                       |
| 51. caterer                        | 108. printer                       |
| 52. shipping clerk                 | 109. clinical psychologist         |
| 53. chambermaid                    | 110. stevedore                     |
| 54. typesetter                     | 111. diplomat                      |
| 55. fisherman                      | 112. teacher of physical education |
| 56. cashier in a restaurant        | 113. dog catcher                   |
| 57. airplane pilot                 | 114. physiotherapist               |

- |                             |                                   |
|-----------------------------|-----------------------------------|
| 115. street cleaner         | 171. radio news commentator       |
| 116. dietitian              | 172. bookkeeper                   |
| 117. playground director    | 173. peanut vender                |
| 118. subway guard           | 174. dancing teacher              |
| 119. dental mechanic        | 175. telephone operator           |
| 120. trade union organizer  | 176. orchestra conductor          |
| 121. machinist              | 177. butler                       |
| 122. surgeon                | 178. undertaker                   |
| 123. civil engineer         | 179. garbage collector            |
| 124. station master         | 180. accountant                   |
| 125. night club singer      | 181. comparison shopper           |
| 126. surveyor               | 182. chocolate dipper             |
| 127. statistician           | 183. proofreader                  |
| 128. coal miner             | 184. gravedigger                  |
| 129. dishwasher             | 185. acoustical engineer          |
| 130. telegraph operator     | 186. composer                     |
| 131. masseur                | 187. bank president               |
| 132. fireman                | 188. acrobat                      |
| 133. cartoonist             | 189. bus driver                   |
| 134. physician              | 190. furrier                      |
| 135. street car conductor   | 191. astronomer                   |
| 136. boilermaker            | 192. chiropodist                  |
| 137. busboy                 | 193. proprietor of a delicatessen |
| 138. umpire                 | 194. sportswriter                 |
| 139. retail clerk           | 195. governess                    |
| 140. interpreter            | 196. jeweler                      |
| 141. baker                  | 197. dairy farmer                 |
| 142. automobile salesman    | 198. hotel chef                   |
| 143. explorer               | 199. prison warden                |
| 144. research chemist       | 200. laboratory technician        |
| 145. manicurist             | 201. kindergarten teacher         |
| 146. private secretary      | 202. glassblower                  |
| 147. milliner               | 203. taxi driver                  |
| 148. cobbler                | 204. football coach               |
| 149. postman                | 205. publisher                    |
| 150. press agent            | 206. university president         |
| 151. osteopath              | 207. cabinet maker                |
| 152. milkman                | 208. barber                       |
| 153. migrant farm laborer   | 209. Baptist minister             |
| 154. organ grinder          | 210. valet                        |
| 155. bank clerk             | 211. social worker                |
| 156. college professor      | 212. filing clerk                 |
| 157. opera singer           | 213. hospital orderly             |
| 158. factory worker         | 214. bartender                    |
| 159. movie extra            | 215. janitor                      |
| 160. furniture mover        | 216. cowboy                       |
| 161. architect              | 217. usher                        |
| 162. dressmaker             | 218. gardener                     |
| 163. optician               | 219. ship's officer               |
| 164. sculptor               | 220. professional baseball player |
| 165. messenger boy          | 221. artist's model               |
| 166. burlesque queen        | 222. tailor                       |
| 167. stockbroker            | 223. psychiatrist                 |
| 168. occupational therapist | 224. butcher                      |
| 169. novelist               | 225. upholsterer                  |
| 170. building contractor    |                                   |

ITEMS FROM WHICH SELECTION WAS MADE  
FOR EXPERIMENT II

1. grabbing a parking space someone else is about to turn into
2. keeping a nickel you find in a telephone booth

3. deliberately standing a person up
4. wearing shorts on the street where it is illegal
5. showing up a fellow student as ignorant in order to enhance your own prestige
6. exceeding the speed limit in thickly settled areas
7. habitually keeping people waiting unnecessarily
8. having a homosexual relationship
9. using brass knuckles in a football game
10. making fun of deaf people
11. sending another person to take a civil service exam for you
12. lying about your whereabouts to protect a friend's reputation
13. throwing vitriol in an enemy's face so that he (she) is hopelessly disfigured
14. putting your deformed child in the circus
15. bringing in a professional baseball player to play in an amateur game
16. accepting traveling fellowships from two universities and keeping both
17. disobeying the law against jay-walking
18. engaging in sabotage in a munitions factory.
19. lying about your golf score to impress other golfers
20. in a tournament tennis game, saying that a ball is out when it is actually in
21. using a congressional franking privilege to send out isolationist propaganda
22. habitually borrowing small sums of money from friends and failing to return them
23. swimming illegally in a reservoir
24. discussing troop movement in public places
25. writing a term paper for a fellow student
26. fishing without a license
27. using guns on striking workers
28. padding your expense account on a government war job
29. buying cheaply from a poor farmer land which you know to have valuable mineral deposits
30. as the purchasing agent for a charitable institution, buying goods from firms in which you have a financial interest
31. poisoning a neighbor's dog whose barking bothers you
32. bribing your way out of a summons for speeding.
33. exposing people to German measles by going to the movies while you are still in the contagious stage
34. failing to put back in the water lobsters which are shorter than the legal limit
35. turning back the mileage on a car when you turn it in
36. violating the dim-out by failing to pull down your shades
37. endorsing for pay a product which you do not use
38. betting on an event which you have "fixed" to come out a certain way
39. selling a dog as a thoroughbred when you know that he is not
40. selling a phoney picture to a museum as a genuine one
41. registering in a hotel under a false name
42. spreading rumors which will injure civilian morale
43. as a clinical psychologist giving therapy which you are not qualified to give
44. operating a house of ill-fame
45. selling to a hospital milk from diseased cattle
46. using a trot in a language course in college.
47. throwing a broken bottle in the road
48. failing to stand for the Star Spangled Banner
49. helping a German prisoner to escape
50. telling a lie in order to escape an embarrassing situation
51. running away from the scene of an accident you have caused
52. manufacturing counterfeit money
53. committing suicide
54. kicking a kitten which has scratched you



55. having sexual relations with a sibling
56. blackmailing an acquaintance about whom you have discovered some damaging facts
57. lying about a friend in order to beat him to a job
58. ridiculing other people's religious beliefs in their presence
59. taking credit for other people's ideas and work
60. calling your mother a damn fool
61. tossing a lighted cigarette out of a car when there is danger of a forest fire
62. cheating at bridge by looking at your opponents' cards
63. cheating in an examination by copying from another student
64. stealing \$10 from an impecunious acquaintance.
65. having sexual relations without marriage
66. betraying a confidential piece of information about a friend under circumstances which would endanger his job
67. spying on behalf of an enemy country
68. spreading rumors that an acquaintance is a sexual pervert
69. cheating at cards by using a marked deck
70. influencing a younger person to become a homosexual
71. murdering your mother without justification or provocation
72. hitting a man illegally in a hockey game
73. doping a horse in a horse race
74. beating a seven-year-old child for stealing a dime
75. habitually becoming so drunk you pass out
76. having incestuous relations with your parent
77. throwing a lighted match into a baby carriage
78. eavesdropping on a private conversation which concerns you
79. lying to a traffic policeman about the speed at which you were driving
80. picking flowers in a public park
81. shooting ducks out of season
82. listening in on a party telephone line
83. forging a check for \$25 in your employer's name
84. using a friend's automobile without permission
85. smoking on the subway in defiance of the law
86. impersonating someone else for purposes of securing a library book
87. passing a quarter which you know to be counterfeit
88. playing poker on Sunday
89. reading other people's private letters without permission
90. pretending to collect money for the Red Cross and pocketing it yourself
91. faking your data in a scientific experiment
92. habitually spitting in the subway
93. failing to pay your bus fare when the conductor overlooks you
94. citing non-existent previous experience in applying for a job
95. refusing to salute the flag
96. lying about your age in applying for a job
97. running up bills with no intention of paying them
98. selling the plans for an American bomber to a Nazi agent
99. habitually swiping people's pencils and failing to return them
100. failing to give your seat on the trolley car to a feeble old woman
101. turning in a false fire alarm
102. telling extremely obscene stories to mixed groups
103. littering a public park with papers and orange peel
104. plagiarizing a few paragraphs from an old book
105. stealing a loaf of bread from a store when you are starving
106. cheating the government out of \$50 in income tax
107. taking money from the collection plate in church
108. tearing ten pages out of the only copy of a book in a college library
109. bribing a filling station attendant to sell you gas beyond your ration
110. cheating at solitaire
111. lying in order to get out of an unattractive date
112. going through a picket line when you know the strike to be a just one
113. twitting an acquaintance about a physical characteristic such as obesity

114. teaching children vulgar words
115. having a sane person committed to a mental hospital in order to get rid of him
116. kidnapping a baby for ransom
117. accepting a job as a cook in a restaurant when you know that you are a typhoid carrier
118. shooting for sport birds that you know are rapidly becoming extinct
119. hitch-hiking in states in which it is illegal
120. moving your croquet ball a few feet when no one is looking
121. taking a reserved book from the library without signing for it
122. writing witticisms on the walls of new public buildings
123. stamping on the American flag
124. sending liquor through the mails against the law
125. snubbing a friend of whose social status you are ashamed
126. using the funds of a club of which you are treasurer and falsifying the records to conceal the fact
127. deliberately spreading venereal disease in the armed forces
128. teaching adolescents to become dope addicts
129. purposely leaving your lights showing during an enemy air raid
130. pocketing the tip which the previous customer left for the waitress
131. using slugs in the subway
132. selling food which you know to be adulterated
133. failing to return the money when you are given too much change in a department store
134. testifying falsely against someone for pay
135. knowingly committing bigamy
136. spitting on a crucifix
137. contributing money to a cause in which you do not believe in order to escape criticism
138. faking illness in order to escape an unpleasant task
139. telling lies about your family background in order to enhance your social position
140. chopping a piece off the Lincoln memorial for a souvenir
141. marrying without telling your spouse that there is hereditary insanity in your family
142. concealing your jail record in order to get a job
143. voting twice in a municipal election.
144. stealing towels from a hotel
145. setting fire to your house in order to get the insurance
146. killing an idiot baby
147. writing anonymous letters to frighten a personal enemy
148. employing children to pick tobacco at 10 cents an hour
149. failing to turn into the police a \$500 bill which you have found
150. wasting water when there is a serious shortage
151. hiring someone to write a thesis and handing it in as your own work
152. excluding a person from a fraternity or sorority because of racial or religious background
153. giving to a person dying of cancer an overdose of morphine which will kill him
154. hoarding consumers goods which are apt to become scarce
155. continually borrowing books and failing to return them
156. having a servant or relative say you are not at home when you are
157. telling children about gruesome bogeymen in order to frighten them into obedience
158. smuggling clothes and jewels past the customs inspector
159. lighting a cigarette in a practice blackout
160. publishing under your own name an investigation originated and carried out without remuneration by a graduate student working under you
161. selling your sugar ration at 100% profit
162. failing to protest a case of injustice because you are afraid to risk your reputation
163. stealing stamps from the company or institution which employs you

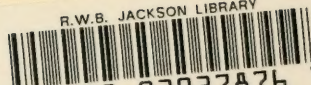
164. deliberately misrepresenting a person to his (her) boy (girl) friend in order to transfer the latter's affection to yourself
165. crowing over a person who has come to grief through failure to follow your advice
166. carving initials on college desks or chairs
167. accepting money for your vote in a national election
168. getting your own way by playing on people's sympathies
169. behaving disrespectfully to a much older person
170. playing up to a person whom you dislike but who can do you favors
171. bawling out servants publicly
172. crowding in front of people in a line at a theater or railway station
173. deliberately making fun of a person to embarrass him before strangers
174. in general conversations habitually pretending to more knowledge than you have about literature, art, etc.
175. selling pork from trichinotic pigs
176. failing to return half a dozen books which the publisher has sent you by mistake
177. saying "present" for your absent friends in a college course in which attendance is required
178. passing a worthless check
179. letting a politician pay your poll tax
180. trespassing on private property for a picnic
181. holding over somebody's head information gained through his talking in his sleep
182. giving babies under your care paregoric to keep them from crying
183. discharging an employee when you find he has been in jail ten years ago for stealing
184. having a sexual relationship with a married person
185. tearing a picture out of a book of which there are only 10 copies in the world
186. breaking a promise without justification
187. torturing prisoners of war to extract information

DEPARTMENT OF PSYCHOLOGY  
LIBRARY  
UNIVERSITY OF PORTLAND





R.W.B. JACKSON LIBRARY



3 0005 03037876 7

150.8

A673

no.281

Archives of Psychology

150.8

A673

no.281

Archives of Psychology

# ARCHIVES OF PSYCHOLOGY

*List of numbers, continued from inside front cover*

198. Learning and Retention: A. L. GILLETTE. \$1.00.
199. Memory for Visual, Auditory, and Visual-Auditory Material: F. R. ELLIOTT. \$1.00.
200. The Atmosphere Effect: S. B. SELLS. \$1.25.
201. The Spoken Language of the Blind Preschool Child: K. E. MAXFIELD. \$1.50.
202. Muscular Exertion upon Mental Performance: H. BLOCK. 80c.
203. Influence of Political Radicalism on Personality Development: S. DIAMOND. \$1.00.
204. Punctuality in Relation to Personality and Achievement: G. J. DUDYCHA. \$1.00.
205. Effects of Shift in Motivation upon Learning: L. B. ABEL. \$1.00.
206. Alcohol and Task Complexity: G. H. & J. P. SEWARD. \$1.00.
207. Prediction from Case Material to Personality Data: L. M. HANKS. \$1.25.
208. The Law of Effect in the Retained Situation: J. V. WAITS. \$1.00.
209. Effect of Preceding Stimuli on Judgment of Auditory Intensities: L. LONG. \$1.00.
210. Trial-and-Error, Gradual Analysis, Reorganization: H. E. DURKIN. \$1.25.
211. Expressive Movements Related to Feeling of Dominance: P. EISENBERG. \$1.00.
212. Basis of Pertinence: M. M. BOLLES. \$1.00.
213. Effect of Changes in Bodily Set: G. W. LAWLER. 80c.
214. Attitudes and Adjustments of Recipients of Old Age Assistance: C. M. MORGAN. \$1.50.
215. Perception of Number as Affected by Monetary Values: H. ANSACHER. \$1.25.
216. Memory Trace for Figures in Recall and Recognition: N. G. HANAWALT. \$1.25.
217. Visual Grouping in Relation to Age: G. P. RUSH. \$1.25.
218. Boredom and Other Factors in the Physiology of Mental Effort: J. E. BARMACK. \$1.25.
219. Effect of Occupational Experience upon Motor Speed and Preferential Tempo: J. P. FOLEY, JR. 80c.
220. Analytical Pre-Study in Memorizing Piano Music: G. RUBIN-RABSON. \$1.00.
221. Five Methods of Serial Rote Learning: L. ADAMS. \$1.00.
222. Individual Consistency in Phenomenal Constancy: M. R. SHEEHAN. \$1.25.
223. Memory in Relation to Hedonic Tone: D. M. BARRETT. \$1.00.
224. Qualitative Analysis of Behavior Following Cerebral Lesions: A. B. NADEL. \$1.00.
225. Experimental Study of the Permanence of Course Material: R. I. WATSON. \$1.00.
226. Development of a Socio-Economic Attitude: B. J. BRESLAW. \$1.25.
227. General and Specific Factors in Transfer of Training: M. A. GORDON. 80c.
228. Methods of Recording Action: G. R. WENDT. \$1.25.
229. Effect of Ricks on Mental Development: M. M. HALLERAN. \$1.00.
230. Individual Differences in the Sentencing Tendencies of Judges: F. J. GAUBET. \$1.00.
231. Studies in the Psychology of Language: E. L. THORNDIKE. \$1.00.
232. Psychological Changes Associated with Head Injuries: R. C. CONKEY. \$1.00.
233. A Quantitative Study of the Visual After-Image: Wm. FEINBLOOM. 80c.
234. Awareness in the Inductive Solution of Problems: C. J. HERRICK. \$1.25.
235. Sociometric Study of Race Cleavage in the Classroom: J. H. CRISWELL. \$1.25.
236. Vocabulary: Its Measurement and Growth: I. GANSL. \$1.00.
237. Dynamic Psychophysics and the Phi Phenomenon: G. M. GILBERT. 80c.
238. Effect of Length of List upon Retroactive Inhibition: M. C. SAND. \$1.00.
239. Psycho-Dynamics of Chewing: H. L. HOLINGWORTH. \$1.50.
240. Some Psychological Correlates of the Electroencephalogram: A. C. WILLIAMS. \$1.00.
241. Confidence and Speed in the Two-Category Judgment: D. M. JOHNSON. \$1.00.
242. Vocabulary Changes in Mental Deterioration: H. M. CAPPS. \$1.25.
243. Efficiency of Actual and "Imaginary" Practice: H. M. PERRY. \$1.25.
244. A Study of Motor Achievements of Young Children: M. V. GUTTERIDGE. \$1.75.
245. Some Correlates of Certain Attitudes of the Unemployed: A. C. TUCKER. \$1.25.
246. Similarity & Diff. in Form on Apparent Visual Movement: J. ORLANSKY. \$1.25.
247. Muscular Action Potentials in Imaginal Weight Lifting: W. A. SHAW. \$1.00.
248. Trait-Consistency in Personality: M. TRAWICK. 80c.
249. Thinking Processes at Various Levels of Difficulty: S. S. SARGENT. \$1.00.
250. Personal Attitudes of Maladjusted Boys: L. RUBENSTEIN. \$1.50.
251. . . . Concepts in Mentally Deficient Schoolboys: L. GRANICH. 80c.
252. . . Intelligence Test Performance of Whites and Negroes in the Rural South: M. BRUCE. \$1.50.
253. Some Factors Influencing the Remembering of Prose Material: K. B. CLARK. \$1.25.
254. Generalizing Ability in Schizophrenia: HENRY JOSEPH WEGROCKI. \$1.25.
255. The Permanence of Interests of Women College Students: B. BURGEMEISTER. \$1.00.
256. Reaction Time of Young Intellectual Deviates: W. S. SCOTT. \$1.00.
257. Effects of Anoxia on Visual Function: C. P. SEITZ. 80c.
258. Influence of Attitude upon the Remembering of Pictorial Material: V. SEELEMAN. \$1.00.
259. Investigation of the Original Response to the Conditioned Stimulus: L. D. LONG. 80c.
260. The Role of Similarity in Retroactive Inhibition: T. W. KENNELLY. \$1.00.
261. The Anchoring of Absolute Judgments: SPAULDING ROGERS. 80c.
262. Variability as a Function of Ability and its Relation to Personality: M. D. BOWN. 80c.
263. A Study of Some Personality Characteristics of Epileptics: E. W. ARLUCK. \$1.25.
264. Development of Facial Expression of Emotion in Blind and Seeing Children: JANE THOMPSON. 80c.
265. Two Mechanisms for the Perception of Visual Numerousness: E. H. TAYES. 80c.
266. A Study in Judging the Opinions of Groups: R. M. W. TRAVERS. \$1.25.
267. The Discrimination of Color and Form Levels of Illumination Below Conscious Awareness: W. E. VINACKE. \$1.00.
268. Interval Discrimination as a Measure of Musical Aptitude: T. H. MADISON. \$1.25.
269. The Psychology of Status: H. H. HYMAN. \$1.25.
270. Problems Relating to Stereotypes: N. SCHOENFELD. \$1.00.
271. Rorschach Responses: HELEN MARGULIES. \$1.00.
272. "Voluntary" Facial Expression in the Blind: J. S. FULCHER. \$1.00.
273. Perception of Grouping and apparent Movement: H. H. CORBIN. \$1.00.
274. Olfactory Thresholds Measured in Terms of Stimulus Pressure and Volume: E. A. JEROME. 80c.
275. Relation Between Motion and Form Acuity: G. S. KLEIN. \$1.25.
276. Relative Merits of Vertical and Horizontal Lines in Reading Chinese Print: CHUNG-YUAN CHANG. \$1.00.
277. "Interviewer-Effect in Public Opinion": A. B. UWOF. 80c.
278. The contribution of practice differences to group variability: M. E. HAMILTON. 80c.
279. Changing the behavior of adolescent girls: V. W. LEWIS. \$1.25.
280. The Form of the Psychometric Function and Simple Reaction Time to Liminal Differences: B. M. FLYNN. 80c.
281. Anchoring Effects in the Absolute Judgment of Verbal Materials: H. R. McGARVEY. \$1.25.



## AMERICAN PSYCHOLOGICAL PERIODICALS

- AMERICAN JOURNAL OF PSYCHOLOGY**—Ithaca, N. Y.; Cornell University. Subscription \$6.50. 624 pages annually. Edited by K. M. Dallenbach, Madison Bentley, and E. G. Boring. Quarterly. General and experimental psychology. Founded 1887.
- JOURNAL OF GENETIC PSYCHOLOGY**—Provincetown, Mass.; The Journal Press. Subscription \$14.00 per annum (2 volumes). 1000 pages annually. Edited by Carl Murchison. Quarterly. Child behavior, animal behavior, and comparative psychology. Founded 1891.
- PSYCHOLOGICAL REVIEW**—Ohio State University, Columbus, O.; American Psychological Association, Inc. Subscription \$5.50. 540 pages annually. Edited by Herbert S. Langfeld. Bi-monthly. General psychology. Founded 1894.
- PSYCHOLOGICAL MONOGRAPHS**—Ohio State University, Columbus, O.; American Psychological Association, Inc. Subscription \$6.00 per volume. 500 pages. Edited by John F. Dashiell. Without fixed dates, each issue one or more researches. Founded 1895.
- PSYCHOLOGICAL BULLETIN**—Ohio State University, Columbus, O.; American Psychological Association, Inc. Subscription \$7.00. 665 pages annually. Edited by John A. McGeoch. Monthly (10 numbers). Psychological literature. Founded 1904.
- ARCHIVES OF PSYCHOLOGY**—New York, N. Y.; Columbia University. Subscription \$6.00 per volume. 500 pages. Edited by R. S. Woodworth. Without fixed dates, each number a single experimental study. Founded 1906.
- JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY**—Ohio State University, Columbus, O.; American Psychological Association, Inc. Subscription \$5.00. 560 pages annually. Edited by Gordon W. Allport. Quarterly. Founded 1906.
- JOURNAL OF EDUCATIONAL PSYCHOLOGY**—Baltimore, Md.; Warwick & York. Subscription \$6.00. 720 pages annually. Edited by J. W. Dunlap, P. M. Symonds, and H. E. Jones. Monthly except June to August. Founded 1910.
- PSYCHOANALYTIC REVIEW**—New York, N. Y.; 64 West 56th St. Subscription \$6.00. 500 pages annually. Edited by Smith Ely Jelliffe. Quarterly. Founded 1913.
- JOURNAL OF EXPERIMENTAL PSYCHOLOGY**—Ohio State University, Columbus O.; American Psychological Association, Inc. Subscription \$14.00 per annum (2 volume). 1250 pages annually. Edited by Samuel W. Fernberger. Monthly. Founded 1916.
- JOURNAL OF APPLIED PSYCHOLOGY**—Lancaster, Pa.; The Science Press Printing Co. Subscription \$6.00. 600 pages annually. Edited by James P. Porter. Bi-monthly. Founded 1917.
- JOURNAL OF COMPARATIVE PSYCHOLOGY**—Baltimore, Md.; Williams & Wilkins Co. Subscription \$10.00 per annum (2 volumes). 900 pages annually. Edited by Roy M. Dorcus, Knight Dunlap and Robert M. Yerkes. Bi-monthly. Founded 1921.
- COMPARATIVE PSYCHOLOGY MONOGRAPHS**—Baltimore, Md.; The Johns Hopkins Press. Subscription \$5.00 per volume. 400 pages. Edited by Roy M. Dorcus. Without fixed dates, each number a single research. Founded 1922.
- GENETIC PSYCHOLOGY MONOGRAPHS**—Provincetown, Mass.; The Journal Press. Subscription \$7.00. 500 pages per annum. Edited by Carl Murchison. Bi-monthly. Each number one complete research. Child behavior, animal behavior, and comparative psychology. Founded 1925.
- PSYCHOLOGICAL ABSTRACTS**—Ohio University, Columbus, O.; American Psychological Association, Inc. Subscription \$7.00. 700 pages annually. Edited by Walter S. Hunter and R. R. Willoughby. Monthly. Abstracts of psychological literature. Founded 1927.
- JOURNAL OF GENERAL PSYCHOLOGY**—Provincetown, Mass.; The Journal Press. Subscription \$14.00 per annum (2 volumes). 1000 pages annually. Edited by Carl Murchison. Quarterly. Experimental, theoretical, clinical and historical psychology. Founded 1927.
- JOURNAL OF SOCIAL PSYCHOLOGY**—Provincetown, Mass.; The Journal Press. Subscription \$14.00 per annum, \$7.00 per volume. 500 pages annually. Edited by John Dewey and Carl Murchison. Quarterly. Political, racial, and differential psychology. Founded 1929.
- PSYCHOANALYTIC QUARTERLY**—Albany, N. Y.; 372-374 Broadway. Subscription \$6.00. 560 pages annually. Edited by Bertram D. Lewin and others. Quarterly. Founded 1932.
- CHARACTER AND PERSONALITY**—Durham, N. C.; Duke University Press. Subscription \$2.00. 360 pages annually. Edited by Karl Zener. Quarterly. Founded 1932.
- JOURNAL OF PSYCHOLOGY**—Provincetown, Mass.; The Journal Press. Subscription \$14.00 per annum (2 volumes). 800-1200 pages annually. Edited by Carl Murchison. Quarterly. Founded 1936.
- PSYCHOMETRIKA**—University of Chicago, Ill.; Psychometric Society. Subscription \$10.00. 320 pages annually. Edited by L. L. Thurstone and others. Quarterly. Quantitative methods in psychology. Founded 1936.
- PSYCHOLOGICAL RECORD**—Bloomington, Ind.; Principia Press. Subscription \$4.00. 500 pages annually. Edited by J. R. Kantor and C. M. Louttit. Without fixed dates, each number a single research. General psychology. Founded 1937.
- JOURNAL OF CONSULTING PSYCHOLOGY**—Colorado Springs, Colorado; The Dintan Printing Co. Subscription \$2.00. 200 pages annually. Edited by J. R. Symonds. Bi-monthly. Founded 1937.